Vienna (TF-300P/PT)
Field Service Manual

Ver. 03

October 12, 1999

TTIC

Index

1. INTRODUCTION 1-1

1.1 STANDARD SPECIFICATIONS 1-1

1.2 GENERAL APPEARANCE 1-7

1.2.1 APPEARANCE 1-7

1.2.2 SHOW THE OPERATION PANEL 1-7

1.3 GENERAL MAINTENANCE FUNCTION 1-9

2. INSTALLATIONS 2-1

2.1 GENERAL 2-1

2.2 SITE SELECTION 2-2

2.3 UNPACKING 2-2

2.4 CHECK OF CONTENTS 2-3

2.5 INSTALLATION OF ATTACHMENTS 2-3

2.5.1 CARTRIDGE AND SIM CARD 2-3

2.5.2 HANDSET AND LINE CORD 2-3

2.5.3 AC CORD CONNECTION 2-4

2.5.4 LOADING PAPER 2-5

3. MAINTENANCE 3-1

3.1 ROUTINE INSPECTION 3-1

4. SYSTEM TEST 4-1

5. MECHANICAL DISASSEMBLY AND REASSEMBLY 5-1

5.1 GENERAL 5-1

5.1.1 PRECAUTIONS PARTS REPLACEMENT 5-1

5.1.2 TOOLS 5-1

5.2 GENERAL MECHANICAL STRUCTURE 5-2

5.3 HOW TO DISASSEMBLE AND REASSEMBLE 5-3

5.3.1 INSTALLING THE INK CARTRIDGE AND SIM CARD 5-3

5.3.2 AC PLUG, HANDSET AND DOC. SUPPORT 5-3

5.3.3 BOTTOM PLATE UNIT 5-3

5.3.4 SIM CARD HOLDER ASSEMBLY 5-4

5.3.5 SCANNER MODE UNIT 5-4

5.3.6 SCANNER MODE ASM. 5-5

5.3.7 SCANNER UNIT 5-5
5.3.8 LOWER FRAME UNIT 5-5
5.3.9 UPPER FRAME UNIT. 5-6
5.3.10 DOCUMENT GUIDE ASSEMBLY 5-7
5.3.11 OPERATION PANEL UNIT 5-7
5.3.12 UPPER COVER UNIT 5-8
5.3.13 PRINTER MODE UNIT 5-8
5.3.14 PRINTER MODE ASM. 5-8
5.3.15 PAPER FEEDER UNIT 5-9
5.3.16 BASE FRAME UNIT 5-10
5.3.17 BOTTOM COVER UNIT 5-11

6. CIRCUIT DESCRIPTION 6-1

6.1 MAIN BOARD CIRCUIT DESCRIPTION (TF-300P, VIENNA 1) 6-1
6.1.1 BLOCK DIAGRAM 6-1
6.1.2 INTEGRATED FAX CONTROLLER 6-1
6.1.3 SCANNER CONTROLLER 6-11
6.1.4 MOTOR DRIVERS 6-11
6.1.5 SWITCH AND SENSORS 6-11
6.1.6 BATTERY AND POWER DOWN RESET 6-11
6.1.7 FAX MODEM CIRCUIT 6-11
6.1.8 MEMORY 6-15
6.1.9 NETWORK INTERFACE 6-16
6.1.10 PANEL INTERFACE 6-16
6.2 MAIN BOARD CIRCUIT DESCRIPTION (TF-300PT) 6-16
6.2.1 BLOCK DIAGRAM 6-16
6.2.2 INTEGRATED FAX CONTROLLER 6-16
6.2.3 SCANNER CONTROLLER 6-26
6.2.4 MOTOR DRIVERS 6-26
6.2.5 SWITCH AND SENSORS 6-26
6.2.6 BATTERY AND POWER DOWN RESET 6-26
6.2.7 FAX MODEM CIRCUIT 6-26
6.2.8 MEMORY 6-30
6.2.9 NETWORK INTERFACE 6-30
6.2.10 PANEL INTERFACE 6-30
6.2.11 SPEAKER PHONE 6-30
6.3 PRINTER BOARD CIRCUIT DESCRIPTION 6-31
6.3.1 PRINTER BOARD TO INKJET HEAD INTERFACE 6-31
6.3.2 PAPER & CARRIAGE MOTOR 6-31

6.3.3 SENSORS & HOST CONNECTOR 6-31
6.3.4 PRINTER HEAD SUPPLY DETECT 6-31
6.3.5 MICROPROCESSOR AND MEMORY 6-31
6.4 KEY BOARD CIRCUIT DESCRIPTION 6-31
6.5 SIMCRAD BOARD CIRCUIT DESCRIPTION 6-32
6.6 NCU CIRCUIT DIAGRAM DESCRIPTION 6-32
6.6.1 GENERAL FUNCTIONS OF NCU (NETWORK CONTROL UNIT) CIRCUIT 6-32
6.6.2 DIALLING METHOD 6-32
6.6.3 RINGING DETECTION 6-32
6.6.4 FAX MESSAGE RECEIVING 6-33
6.6.5 FAX MESSAGE TRANSMITTING 6-33
6.6.6 BUILT-IN HANDSET AND SERIAL EQUIPMENT DETECTION 6-33
6.6.7 VOICE MESSAGE RECORD AND PLAY (ONLY FOR TF-300PT) 6-33
6.7 TELEPHONE CIRCUIT DIAGRAM DESCRIPTION 6-33
6.7.1 GENERAL FUNCTIONS OF TELEPHONE CIRCUIT 6-33
1.1.2 TELEPHONE IC AS2534 GENERAL DESCRIPTION 6-33
1.1.3 RINGING 6-33
1.1.4 DTMF DIALLING 6-34
6.7.2 PULSE DIALLING (OPTIONAL FUNCTION) 6-34
1.1.5 SPEECH MODE 6-34
6.8 POWER SUPPLY DESCRIPTION 6-35
6.8.1 INPUT SPECIFICATION 6-35
6.8.2 OUTPUT SPECIFICATION 6-35
6.8.3 GENERAL FEATURE 6-36
6.8.4 ENVIRONMENT SPECIFICATION 6-36
6.8.5 INTERNATIONAL STANDARDS 6-37

7. TROUBLESHOOTING 7-1

7.1 TF-300P (VIENNA 1) 7-1
7.1.1 LCD FAILS TO DISPLAY AFTER POWER ON 7-1
7.1.2 HALF OF LCD DISPLAY FULL BLACK AFTER POWER ON 7-2
7.1.3 LCD DISPLAY NORMAL ON STARTING BUT KEY FAILED 7-3
7.1.4 TIME DISPLAY ABNORMAL 7-4
7.1.5 IT WORKS PRESSING KEY BUT SPEAKER REMAINS MUTE 7-5
7.1.6 RESET ON STARTING 7-6
7.1.7 LCD DISPLAY "NO PAPER" WHILE RECORDING PAPER IS LOADED 7-7
7.1.8 C.I.S. MOTOR REMAINS MOTIONLESS 7-8
7.1.9 FAILED TO FEED DOCUMENT 7-9
7.1.10 OVER FEEDING DOCUMENT UNTIL "DOCUMENT JAM" 7-9

7.1.11 COPY QUALITY IS TOO BRIGHT 7-10
7.1.12 FAILED TO TRANSMIT SUCCESSFULLY 7-10
7.1.13 FAILED TO RECEIVE SUCCESSFULLY 7-11
7.1.14 PRINTER ENGINE OFF 7-11
7.1.15 PRINTER ACTS FAILED 7-12
7.1.16 CERTAIN BLOCKS FAILED IN PRINTING 7-12
7.1.17 COPY ALL BLACK 7-13
7.1.18 ALL WHITE PRINTING 7-14
7.1.19 PRINTING OR COPYING ERROR DATA 7-14
7.1.20 PRINTER CAN'T INITIAL 7-15
7.1.21 CARRIAGE MOTOR REMAINS MOTIONLESS 7-16
7.1.22 LINE FEED MOTOR REMAINS MOTIONLESS 7-17
7.1.23 PRINTING WITH LINE LOST 7-17
7.1.24 FAILED TO DETECT PAPER JAM SENSOR 7-18
7.1.25 SIM CARD INVALID 7-18
7.2 TF-300PT (VIENNA 2) 7-19
7.2.1 LCD FAILS TO DISPLAY AFTER POWER ON 7-19
7.2.2 HALF OF LCD DISPLAY FULL BLACK AFTER POWER ON 7-20
7.2.3 LCD DISPLAY NORMAL ON STARTING BUT KEY FAILED 7-21
7.2.4 TIME DISPLAY ABNORMAL 7-22
7.2.5 IT WORKS PRESSING KEY BUT SPEAKER REMAINS MUTE 7-23
7.2.6 RESET ON STARTING 7-24
7.2.7 LCD DISPLAY "NO PAPER" WHILE RECORDING PAPER IS LOADED 7-25
7.2.8 C.I.S. MOTOR REMAINS MOTIONLESS 7-26
7.2.9 FAILED TO FEED DOCUMENT 7-27
7.2.10 OVER FEEDING DOCUMENT UNTIL "DOCUMENT JAM" 7-27
7.2.11 COPY QUALITY IS TOO LIGHT 7-28
7.2.12 FAILED TO TRANSMIT SUCCESSFULLY 7-28
7.2.13 FAILED TO RECORD A MESSAGE 7-29
7.2.14 FAILED TO RECEIVE SUCCESSFULLY 7-30
7.2.15 PRINTER ENGINE OFF 7-30
7.2.16 PRINTER ACTS FAILED 7-31
7.2.17 CERTAIN BLOCKS FAILED IN PRINTING 7-31
7.2.18 COPY ALL BLACK 7-32
7.2.19 ALL WHITE PRINTING 7-33
7.2.20 PRINTING OR COPYING ERROR DATA 7-33
7.2.21 PRINTER CAN'T INITIAL 7-34
7.2.22 CARRIAGE MOTOR REMAINS MOTIONLESS 7-35
7.2.23 FAILED TO DETECT PAPER JAM SENSOR 7-36

7.2.24 LINE FEED MOTOR REMAINS MOTIONLESS 7-36
7.2.25 PRINTING WITH LINE LOST 7-37
7.2.26 SIM CARD INVALID 7-37
7.3 TROUBLE SHOOTING FAX MECHANICAL PROBLEM 7-38
7.4 NCU/TEL BOARD TROUBLE SHOOTING 7-41
7.4.1 RINGING 7-41
7.4.2 DIALLING 7-41
7.4.3 HANDSET FUNCTION 7-41

Appendix

8. PART LIST 8-1

8.1 MAIN BOARD PART LIST 8-1

8.2 KEY BOARD PART LIST 8-4

8.3 PRINT BOARD PART LIST 8-5

8.4 SIMCARD BOARD PART LIST 8-6

8.5 NCU BOARD PART LIST 8-6

8.6 POWER SUPPLY PART LIST 8-31

9. MECHENICAL DRAWING AND PARTS LIST 9-1

10. CIRCUIT DRAWING 10-1

1. INTRODUCTION

1.1 Standard Specifications

<table>
<tr><th>ITEM</th><th>VIENNA 1 (TF-300P)</th><th>VIENNA 2 (TF-300PT)</th></tr>
<tr><td colspan="3">1. General</td></tr>
<tr><td>(1) Type</td><td colspan="2">Desk Top Transceiver
Copier</td></tr>
<tr><td>(2) Line</td><td colspan="2">PSTN or PABX</td></tr>
<tr><td>(3) Compatibility</td><td colspan="2">ITU-T G3</td></tr>
<tr><td>(4) Communication Time</td><td colspan="2">Depends on What FAX Engine is selected
<table>
<tr><td>Controller</td><td>FC-200</td><td>FC-200M</td></tr>
<tr><td>Modem</td><td>R96DFXL/
R144EFXL</td><td>RFX96V24/
RFX144V24</td></tr>
<tr><td>Time</td><td>18 sec</td><td>10~12 sec</td></tr>
</table></td></tr>
<tr><td>(5) LCD</td><td colspan="2">1 × 16</td></tr>
<tr><td>(6) Key Number</td><td>32
CCITT key×12
START key×1
STOP key×1
FUNCTION key×1
REDIAL / PAUSE key×1
Receive MODE key×1
On HOOK key×1
One-touch key×9
DIRectory key×1
RESOLUTION×1
Recall/ACCESS×1
Cursor×2 (← →)</td><td>32
CCITT key×12
START key×1
STOP key×1
FUNCTION key×1
REDIAL / PAUSE key×1
Receive MODE key×1
On HOOK key×1
One-touch key×9
DIRectory key×1
RESOLUTION key×1
Recall/ACCESS key×1
Cursor×2 (← →)
DELETE key× 1
SKIP key× 1
PLAY key× 1
REC key× 1</td></tr>
<tr><td>(7) LED Number</td><td colspan="2">3 (Alarm, Memory, Hook)</td></tr>
<tr><td>(8) Auto Dial</td><td colspan="2">Alpha-Search, One-touch, Redial</td></tr>
<tr><td>(9) Automatic Reception</td><td colspan="2">Yes</td></tr>
<tr><td>(10) Coding</td><td>MH/MR</td><td>MH/MR</td></tr>
<tr><td>(11) ECM</td><td colspan="2">User setting for the ON/OFF selection (Option)</td></tr>
<tr><td>(12) Polling</td><td colspan="2">Free / Password</td></tr>
</table>

ITEM	VIENNA 1 (TF-300P)	VIENNA 2 (TF-300PT)
(13) Timer Transmission	When there are any transmission files pending in memory, no more timer transmission can be reserved. (24hrs)	
(14) Multi-Copy	Up to 50	
(15) TTI	Inside/Off Date/Time/ID/Name/Page No	
(16) Languages	3, Any combination	2, Any combination
(17) TAD Interface	Yes (CNG detection in idle mode)	No
(18) Built-in TAM	No	Yes
(19) SIM CARD Interface	Yes	
(20) Distinctive Ringing	(Option)	
(21) Parallel Fax pick-up	Yes	
(22) Caller ID	(Option)	
2. Scanner Section		
(1) Scanning Method	CIS	
(2) ADF	5 pages (Multi 0.07-0.12 mm / Single 0.06-0.15 mm)	
(3) Document	A4/Letter Min. Length 200 mm / Max. Length 600 mm	
(4) Resolution	Horizontal: 8 dots/mm Vertical: 7.7 (Photo) l/mm Vertical: 3.85 (Std), 7.7 (Fine) l/mm	
(5) Grey Scale	64 Levels (Error Diffusion)	
(6) Auto Background Control	Yes	
(7) Contrast	Light/Normal/Dark (User Selectable) LIGHT for dark original DARK for Light original	
(8) Document Orientation	Face down	
(9) Effective Scan Width	210mm	
(10) Scanning Speed	20 ms/line	
3. Printer Section		
(1) Printer Method	Ink-jet (HP solution)	
(2) Paper Orientation	Face Up Print	
(3) Resolution	300dpi × 200dpi (Vertical ✕ Horizontal)	
(4) Recording Paper	Pre-cut Plain Paper (A4 / Letter)	
(5) Paper Width	216 mm (max)	
(6) Recording Width	203 mm	
(7) Printable Area	Top –4mm/Bottom –7mm /Left and Right side –3mm	
(8) Paper Cassette	50 sheets (90g A4)	
(9) Inkjet Cartridge	1700 pages (ITU Chart #1) (40cc Pen Cartridge) 850 pages (ITU Chart #1) (20cc Pen Cartridge)	

ITEM	VIENNA 1 (TF-300P)	VIENNA 2 (TF-300PT)
(10) Printing Speed	2 pages/min	
(11) Reduction	Selectable for user (100, 94, 86, 79%)	
(12) Print Density	OD 1.2 +/- 0.2	
4. Dialling		
(1) Alpha Dialling	20 Locations (40 digit numbers / 20 char. Tel + Fax NR) W/doc. or polling operation→ Fax number to be chosen. W/O doc. and "non-polling" operation→ Tel number to be chosen.	
(2) One Touch	9 Locations	5 Locations
(3) Group Dialling	No	
(4) Manual Redial	Last No. Dialled	
(5) Automatic Redial	Redial Count→ selectable by the service parameter (1 to 9) Redial Interval → selectable by the service parameter (1 to 5min) Redial Condition→ busy tone detection	
(6) Dialling	DTMF (Pulse Optional)	
(7) PABX-> PSTN Access	YES (Digit / Flash) (Earth optional)	
5. Telephone Features		
(1) Built-in Handset	Yes	
(2) Monitor Speaker	Yes	
(3) Handsfree Talking	No	
(4) On-Hook Dialling	Yes	
(5) Volume Control	On-line adjustment (4 levels), automatically fallback to default value when the call is finished. (Speaker and internal ring signal)	
(6) Tel/Fax Switch	Yes	
(7) Power Off Dial	Ten key dial (Option)	
(8) Recall Function	YES (long or short Flash = fixed by FW) (Earth Option)	
(9) Ringer Volume Control	YES (ON/OFF only)	
(10) Confidence Tone	Option	
6. Communication		
(1) Transmit Level	0dBm to –15dBm	
(2) Reception Levels T.30 Reception Other Signal	 0 dBm to –43 dBm -5 dBm to –43 dBm	
(3) Modem Recommendation	V29, V27ter, V21 for R96DFXL (Basic) V33, V29, V27ter, V21, V17 for R144EFXL (option)	V29, V27ter, V21 for RFX96V24 (Basic) V33, V29, V27ter, V21, V17 for RFX144V24 (option)
7. Report/Lists		
(1) Activity Report	40 Transactions (On/Off)	
(2) Tx/Rx Confirmation Report	Yes (On/Off/Error)	

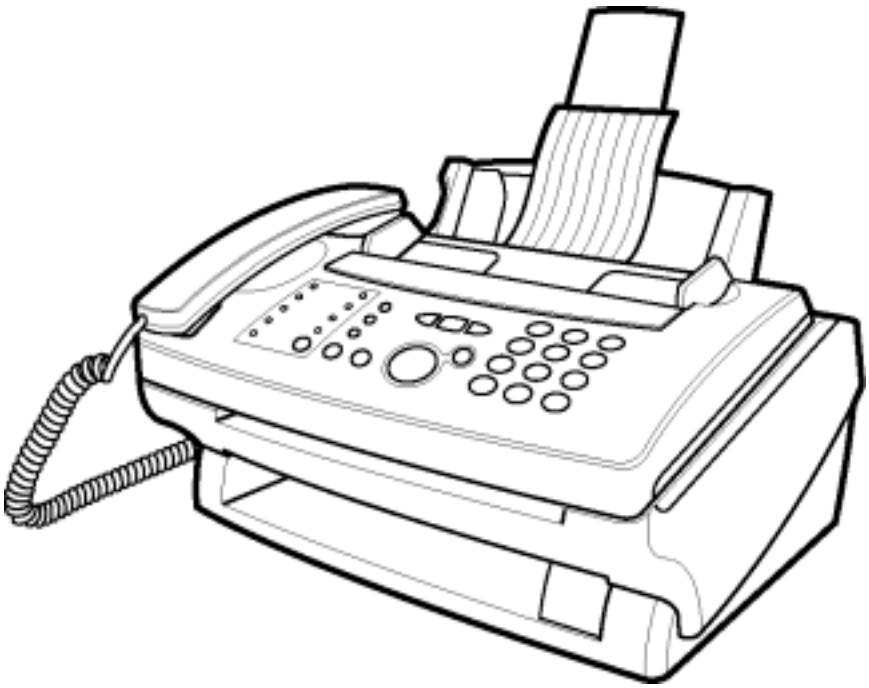
ITEM	VIENNA 1 (TF-300P)	VIENNA 2 (TF-300PT)
(3) Phone Book	Alpha dial and One Touch dial printed on different pages.	
(4) User Options / Setup	Yes	
(5) Callback Message	No	
(6) Service Options / Setup	Yes	
(7) Power Failure Report	When power-failure happens during the following conditions, "Power Failure Report" will be printed after power-on. a) XMTing (ADF or Memory) b) Redial Waiting c) Delay XMT pending d) RCVing e) Memory Reception file pending	No (page memory backup)
(8) Low Ink Warning Message	Yes (User selectable)	
(9) Ink Order Sheet	Yes (User selectable, option)	
(10)Weekly Test	Yes (User selectable, option)	
8. Image Memory		
(1) Memory Transmission	Delayed transmission and "To be Polled" goes through memory.	
(2) Memory Reception	All reception goes through memory. Multiple files are possible for memory reception. When there is no paper, received data is stored into memory and printing starts whenever paper is set.	
(3) Image Memory	512Kbyte DRAM (20 pages ITU#1) for Non ECM Version 1 MByte – 128 Kbyte for ECM Version	512Kbyte DRAM (20 pages ITU#1) for Non ECM Version 1 MByte – 128 Kbyte for ECM Version 1Mbyte for Voice Memory
9. TAM Features		
(1) Operation	No	Playback, Repeat, Delete, Skip and Record
(2) Outgoing Message	No	3 OGMs (20sec/each)
(3) Time / Date stamp	No	Yes, (only for local display)
(4) Call record	No	Yes
(5) Audible Message Indicator	No	No
(6) Call screen	No	Yes
(7) Toll save	No	Yes
(8) Answer only	No	No
(9) Recording Time	No	20 mins
(10)Record length	No	1 min, 3 min, unlimited

ITEM	VIENNA 1 (TF-300P)	VIENNA 2 (TF-300PT)
(11)Remote control	No	All functions under (1) (Exclude Record)
(12)Backup time	No	8 hours
10. Others		
(1) Self-diagnosis	Yes	
(2) Test Mode	Yes	
(3) Backup Memory	Yes (rechargeable NiMH-Battery)	
	SRAM & RTC (3.6V)	DRAM (4.8V), SRAM & RTC (3.6V)
11. Design		
(1) Dimensions	360(L) × 294(D) × 204(H) mm	
(2) Weight	4.7 kg	
(3) Power Consumption	Max. 9 W (standby) Max. 40W (all-black)	
(4) AC Input	100~240V ± 10%, 50/60Hz	
(5) Electro-Static Discharge	8KV (no Malfunction) 16KV (no Damage)	
(6) Temperature		
Operation	15~35ºC	
Storage	-30~60ºC	
Transfer	-30~60ºC	
(7) Humidity		
Operation	20~80% R.H	
Storage	20~80% R.H	
Transfer	20~80% R.H	
(8) Reliability		
MTBF	30,000hrs Hours power on (20RX / 20TX / 10 Copy per day)	
MTTR	30 mins	
Machine Life	60,000 sheets	
(9) Audible Noise	< 55dBA (ISO7779)	
(10) Safety Standards	USA + CANADA + EUROPE (CE and CB)	
(11) EMI Standard	EN55022 / VDE 0878 part 1/2/30 + USA + CANADA	
(12) CE Mark		
EMC	89/336/EEC (EN5008101, EN50081-2)	
Safety/Low Voltage	93/68/EEC	
12. Accessories		
(1) Handset & Cord	Yes	
(2) Line Cord	Yes	
(3) Power Cord	Yes	

ITEM	VIENNA 1 (TF-300P)	VIENNA 2 (TF-300PT)
(4) User Guide	Yes	
(5) Ink Cartridge	Mono with SIM Card	

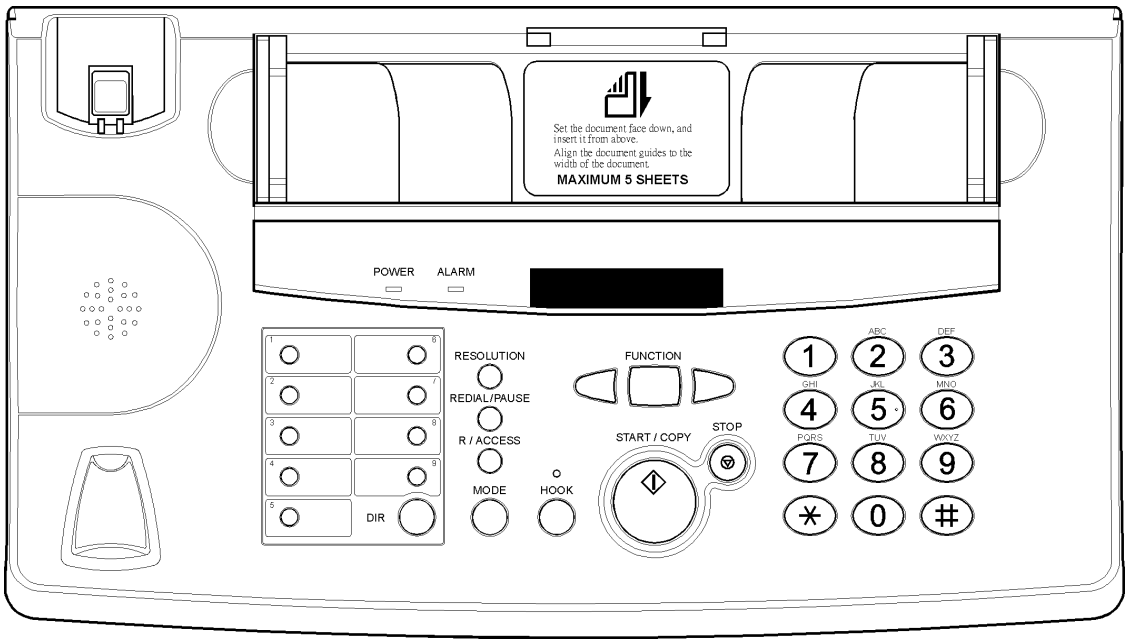
1.2 General Appearance

1.2.1 Appearance

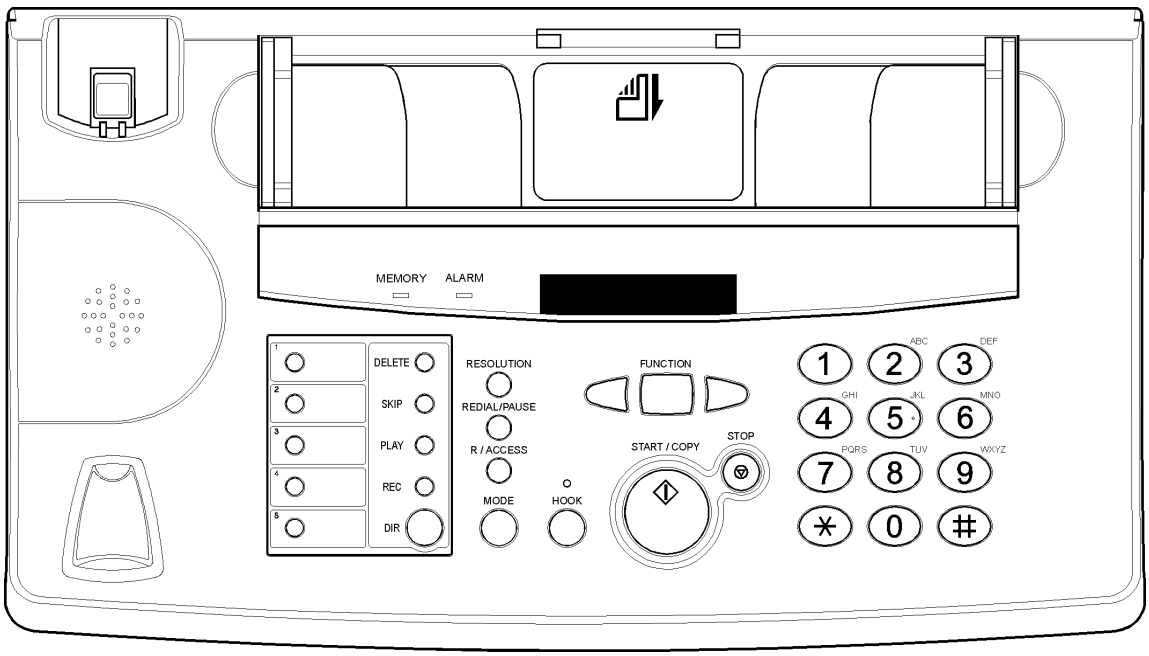


1.2.2 Show the operation panel

TF-300P (VIENNA 1)



TF-300PT (VIENNA 2)



1.3 General Maintenance Function

- Self-diagnosis

(1) ROM VERSION

(2) PRINT TEST

(3) CHKSUM DISPLY

(4) LED TEST

(5) KEY TEST

(6) LCD TEST

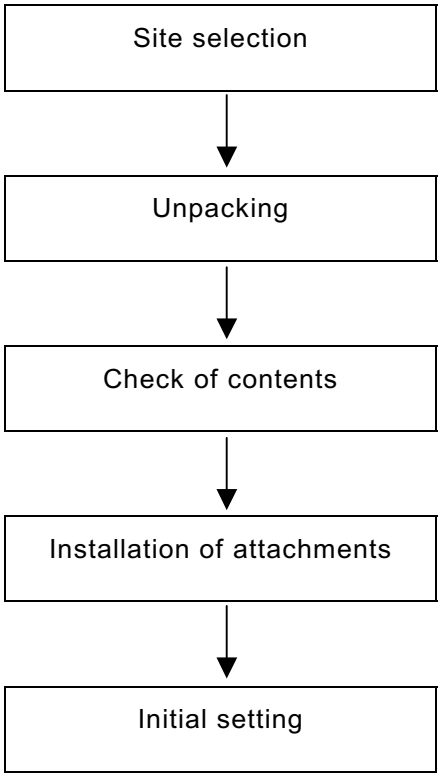
(7) SENSOR TEST

(8) CCD Calibration

2. INSTALLATIONS

2.1 General

The following flowchart outlines the installation procedure.



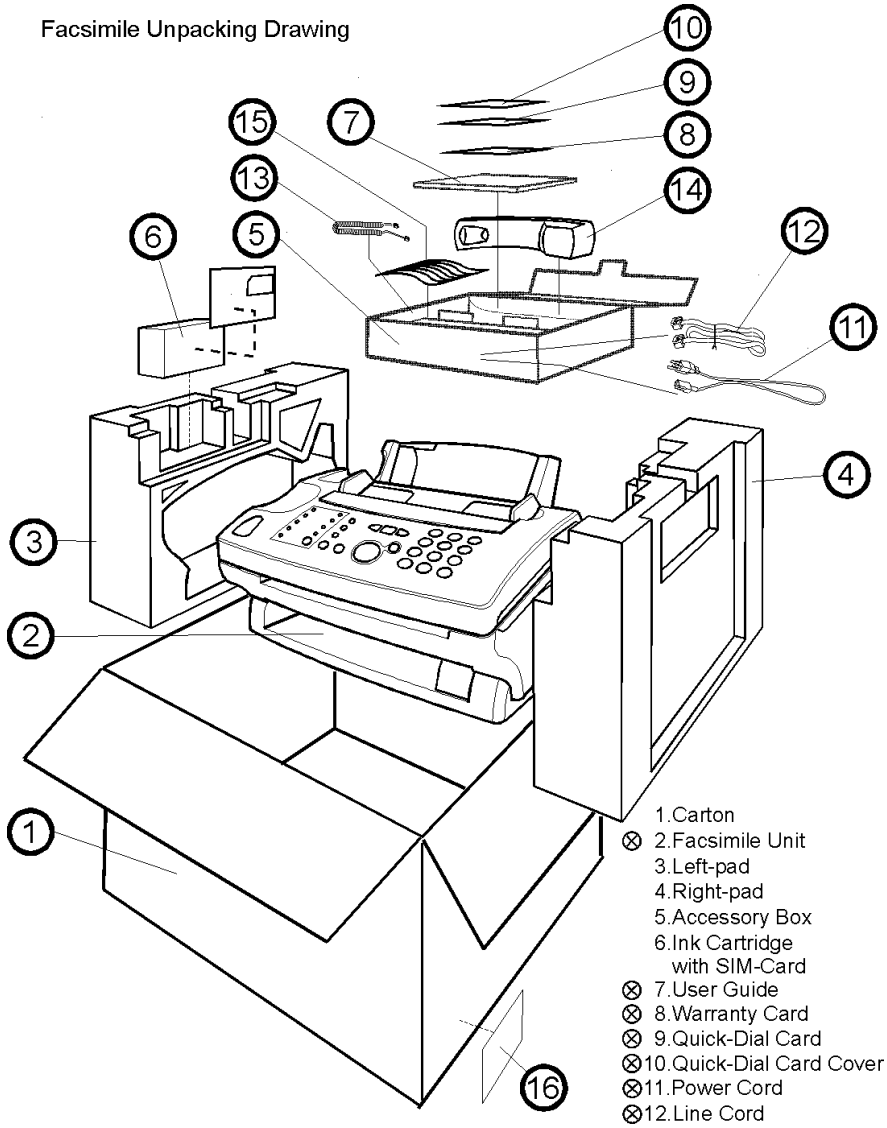
2.2 Site Selection

The installation site

- Shall be free from outside vibrations, dust, etc.
- Shall not be directly exposed to sunlight and sudden changes in temperature.
- Must be horizontal and flat.
- Should have enough space in front of FAX machine to allow recording paper and documents to be stacked;
- Shall not have any large, electrical noise-producing machine nearby.

2.3 Unpacking

Facsimile Unpacking Drawing



1.Carton
⊗ 2.Facsimile Unit
3.Left-pad
4.Right-pad
5.Accessory Box
6.Ink Cartridge with SIM-Card
⊗ 7.User Guide
⊗ 8.Warranty Card
⊗ 9.Quick-Dial Card
⊗10.Quick-Dial Card Cover
⊗11.Power Cord
⊗12.Line Cord
⊗13.Spring Cord
⊗14.Handset
⊗15.Doc Support
⊗16.ID Tag

"⊗": The Part with the PE bag

(1) Open the top cover of the cardboard box.

(2) Take out the machine with Styrofoam from the box.

(3) Take out the machine with plastic wrapper from the box.

2.4 Check of Contents

After having taken out the machine and accompanied accessories from the cardboard box, check the contents according to the following list:

(1) FAX machine

(2) Handset and Spring cord

(3) Documents Support (Plastic or Steel)

(4) AC cord

(5) Line cord

(6) User manual and Quick-dial Card

(7) Ink Cartridge and SIM Card

2.5 Installation of Attachments

2.5.1 Cartridge and SIM Card

(1)Open the front cover.

(2)Remove the sealing tape from the printer head.

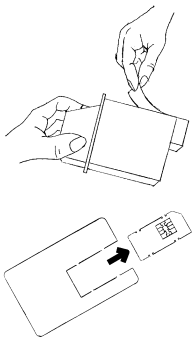
(3)Slide the cartridge in place.

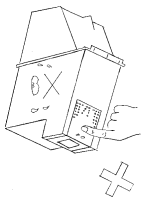
(4)Push the lever up to lock the cartridge in position.

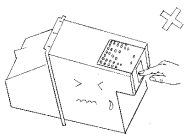
(5)Insert the new SIM card.

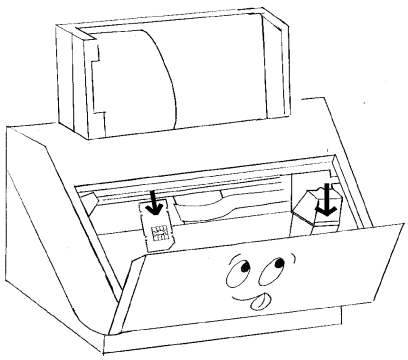
(6)Close the front cover properly using both hands.

∗ Avoid touching the nozzles and the electrical contacts.









2.5.2 Handset and Line Cord

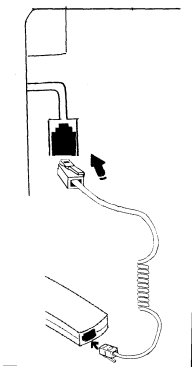
(1)Insert the handset cord into the socket upon the handset and the other end into the socket on the base of the facsimile.

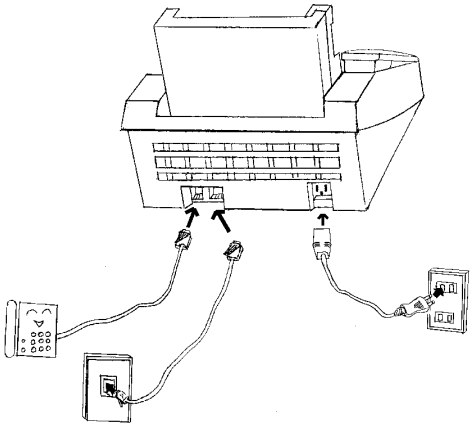
(2)Plug the telephone line cord into the main unit.

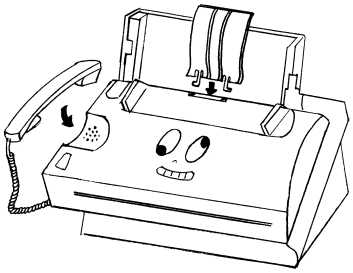
(3)Connect the telephone or answering machine set to TEL jack.

(4)Place handset on top of facsimile and slide the document support into the holes on the cover of the facsimile.

(5)Plug in power cord and use the supplied cable to connect the facsimile. (See 2.5.3)







✪ *After power on, the LCD will display the* INITIALIZING *for a period of time. This time is used to clean the cartridge and warm up the printer.*Insert the paper tray by holding it in an upright position,

2.5.3 AC Cord Connection

(1) The power supply is provided as follows:

Voltage range 220~240 VAC, 50/60 HZ ± 3 Hz

or 100~120 VAC,50/60 Hz

(2) Check whether the voltage range of your input is within the above-mentioned voltage range and if so, insert the mains lead into the power inlet on the back panel of the machine.

(3) Plug the main lead into a single wall outlet with a correct power supply, which is near to the unit and is easily accessible.

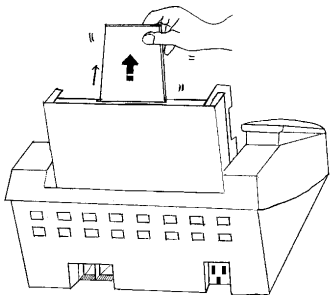
(4) Check the display shows “(Date & Time)” standby mode.

2.5.4 Loading Paper

(1)Pull out the paper support.

(2)Push the lever on the right side of paper cassette backward.

Place the paper in the cassette so that the side you want to print on faces you and the top of the page points downward. Take care to keep the height of the stack below the mark on the right side of the paper cassette.

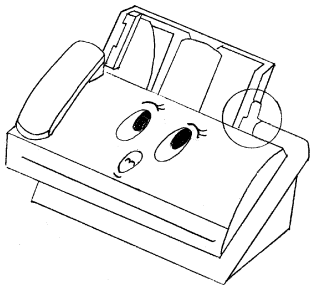


(3)The cassette holds up to 50 sheets.

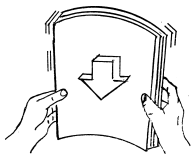
(4)Align the paper on the right side of the cassette and push it down to the bottom.

(5)Adjust the left paper guide.

(6)Pull the lever toward the front of the machine. The paper is held in place.



∗ If the machine runs out of paper during a print job, the LCD shows ADD PAPER.



3. MAINTENANCE

3.1 Routine Inspection

Basically, the routine inspection of following items are performed about every one year after the machine is installed. The description of routine inspection is shown in table 4.1.1.

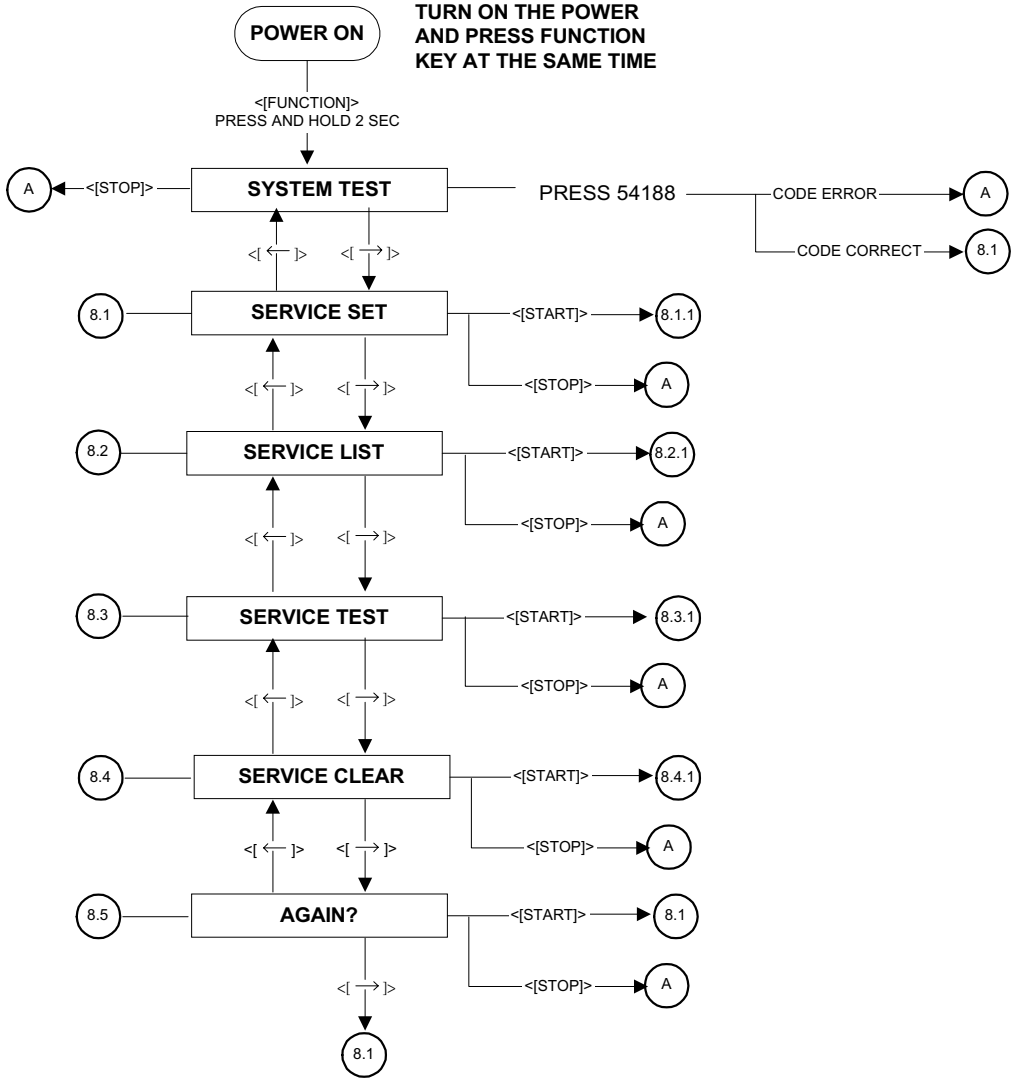
Table 3-1 Routine Inspection

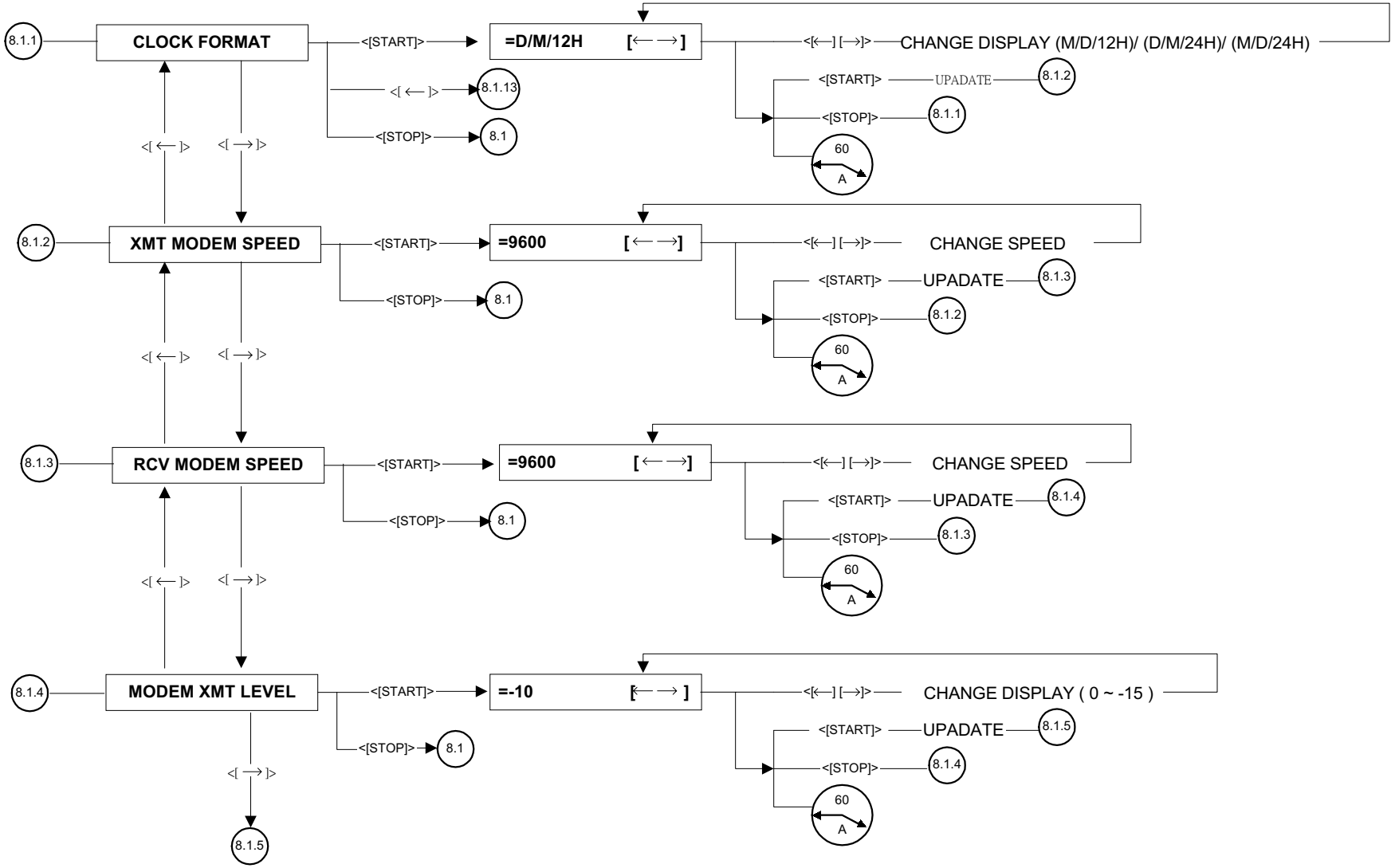
NO	Inspection Item	Procedure	Remarks
1	I.S Platen	Clean with ethyl alcohol.	
2	A.D.F. roller	Clean with ethyl alcohol.	
	Pick up roller	Check the pick up rollers for wear.	
	Exit roller	Clean with ethyl alcohol.	
3	A.D.F. separation rubber pad	Clean with warm or cold water.	
		If this rubber is worn out, replace this rubber.	
4	Carrier Transport	Check the following parts for wear:	
		◦ Carrier transport belt.	
		◦ Carrier guide rod.	
		◦ Idler pulley parts	
5	Print head carrier assembly	Check it for a loose or worn wiper and cap.	
		Clean the contact of print head cable by a clean dry cloth.	
		Check the following parts for wear or damage:	
		◦ Rubber Backer	
		◦ Print Cartridge Latch	
		◦ Latch Spring	
		◦ Carrier	
6	Contact Image Sensor (C.I.S.)	Check it for stains of paper dust, etc.	
		Clean it with ethyl alcohol, if necessary.	
7	Microswitch operation		
	Cover switch	Confirm that the LCD shows “CLOSE COVER”.	
		When the paper cover opened and that message disappears when the cover closed.	
	◦ Paper sensor	The LCD shows “ADD PAPER” when runs out of recording paper.	
8	Lubrication	Apply white grease to the motor gear and all gear mounting stud when parts are replaced or as needed.	
		The carrier to carrier frame engagement.	
9	Cleaning	Remove outside fallen materials, if any, from the machine.	

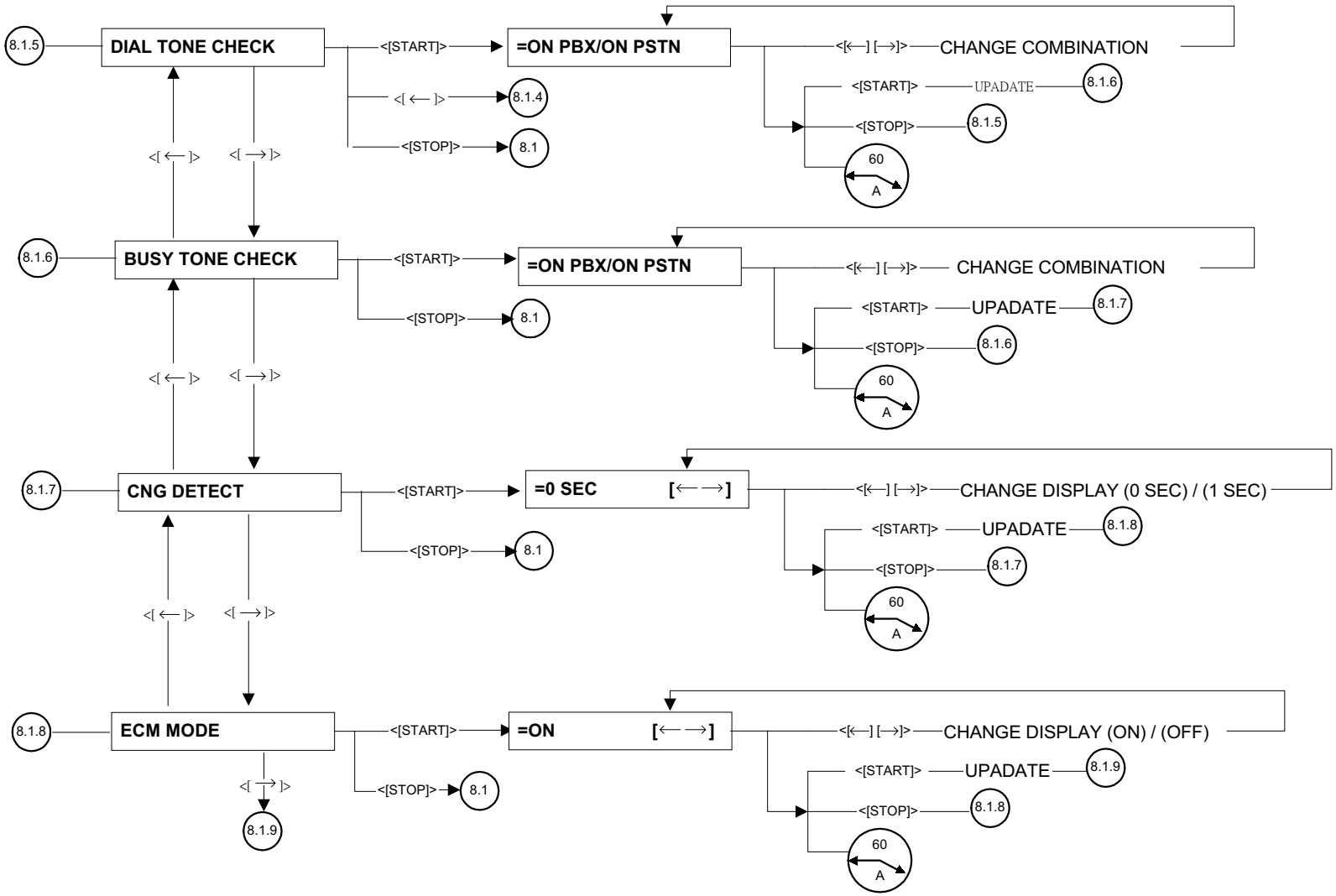
Note:

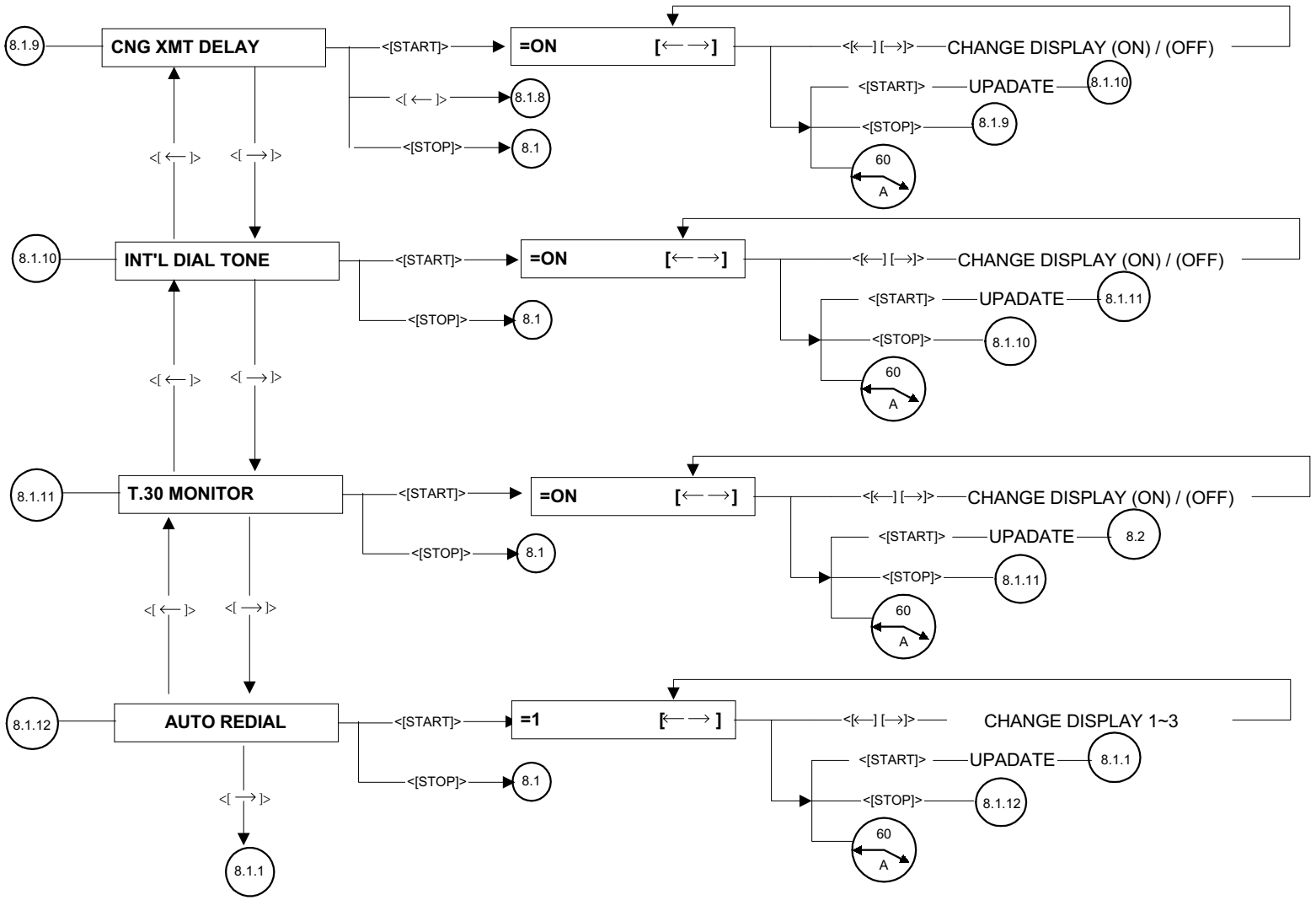
When returning all rollers to its original position, confirm that its plastic bushing of the roller properly set into the groove of the frame unit and turn the bushing to make sure the pin point of tab is tightly inserted to the frame surface.

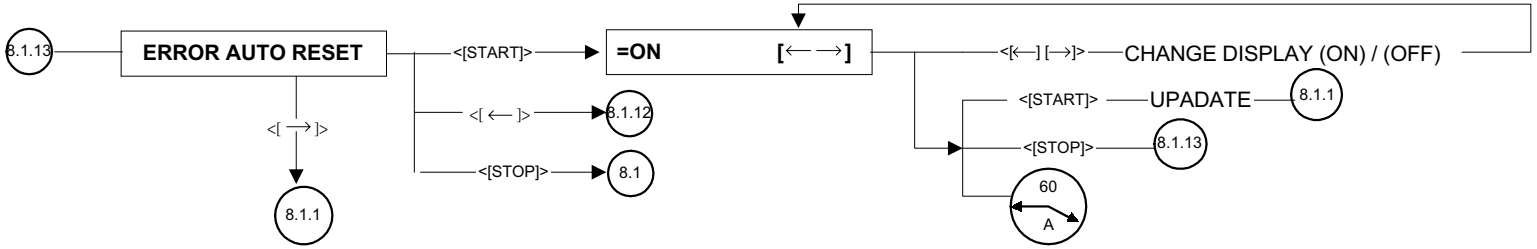
4. SYSTEM TEST

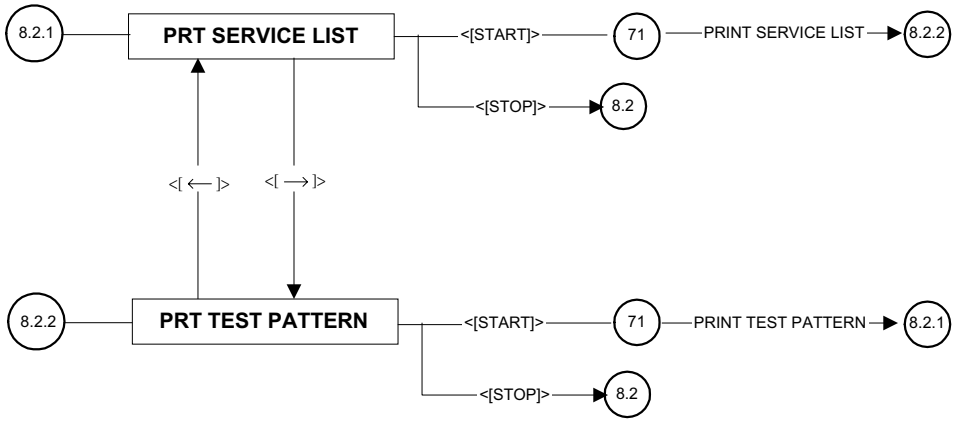


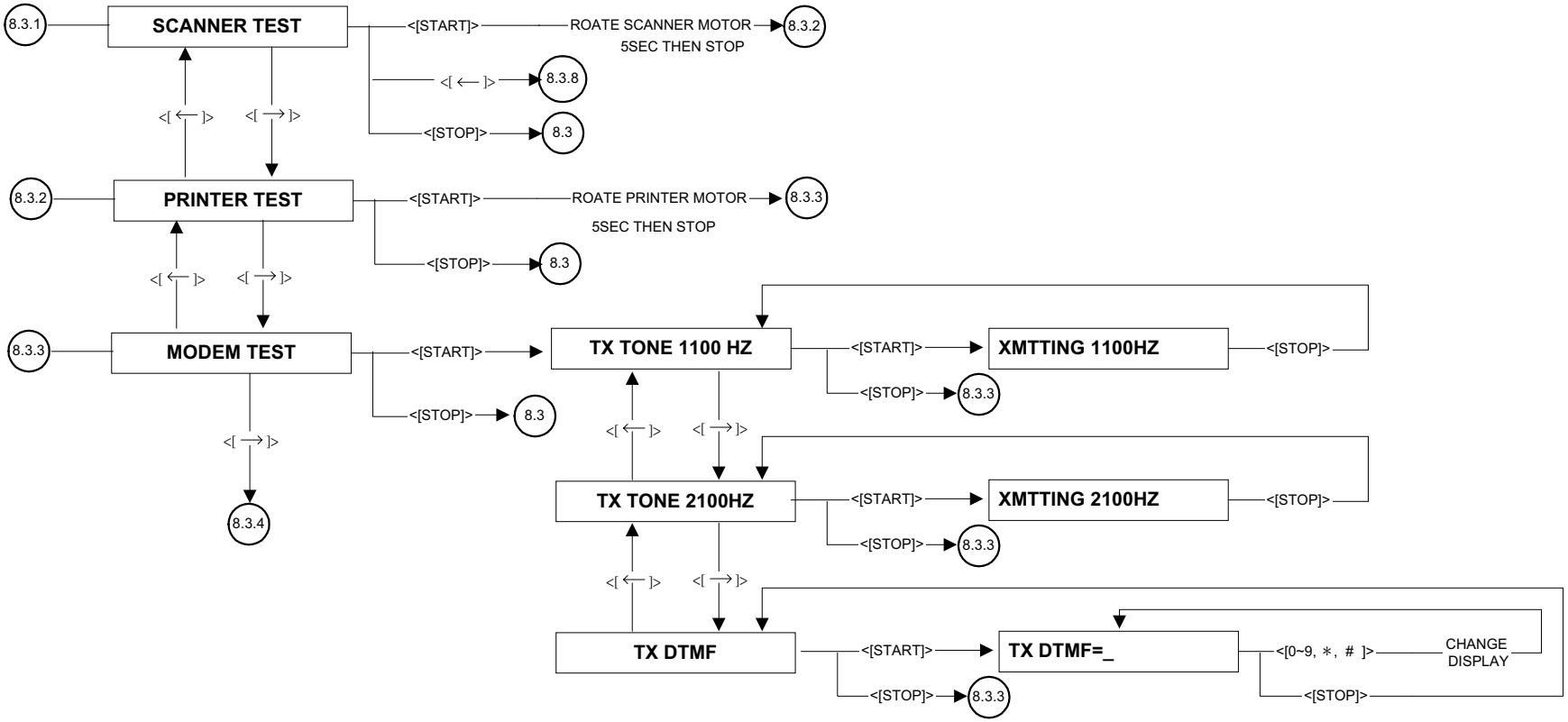

8.1.1
CLOCK FORMAT
<[START]>
=D/M/12H [← →]
<[←] [→]>
CHANGE DISPLAY (M/D/12H)/ (D/M/24H)/ (M/D/24H)
<[START]>
UPADATE
8.1.2
<[STOP]>
8.1.1
60
A
<[←]>
8.1.13
<[STOP]>
8.1
<[←]>
<[→]>
8.1.2
XMT MODEM SPEED
<[START]>
=9600 [← →]
<[←] [→]>
CHANGE SPEED
<[START]>
UPADATE
8.1.3
<[STOP]>
8.1.2
60
A
<[STOP]>
8.1
<[←]>
<[→]>
8.1.3
RCV MODEM SPEED
<[START]>
=9600 [← →]
<[←] [→]>
CHANGE SPEED
<[START]>
UPADATE
8.1.4
<[STOP]>
8.1.3
60
A
<[STOP]>
8.1
<[←]>
<[→]>
8.1.4
MODEM XMT LEVEL
<[START]>
=-10 [← →]
<[←] [→]>
CHANGE DISPLAY (0 ~ -15)
<[START]>
UPADATE
8.1.5
<[STOP]>
8.1.4
60
A
<[STOP]>
8.1
<[→]>
8.1.5

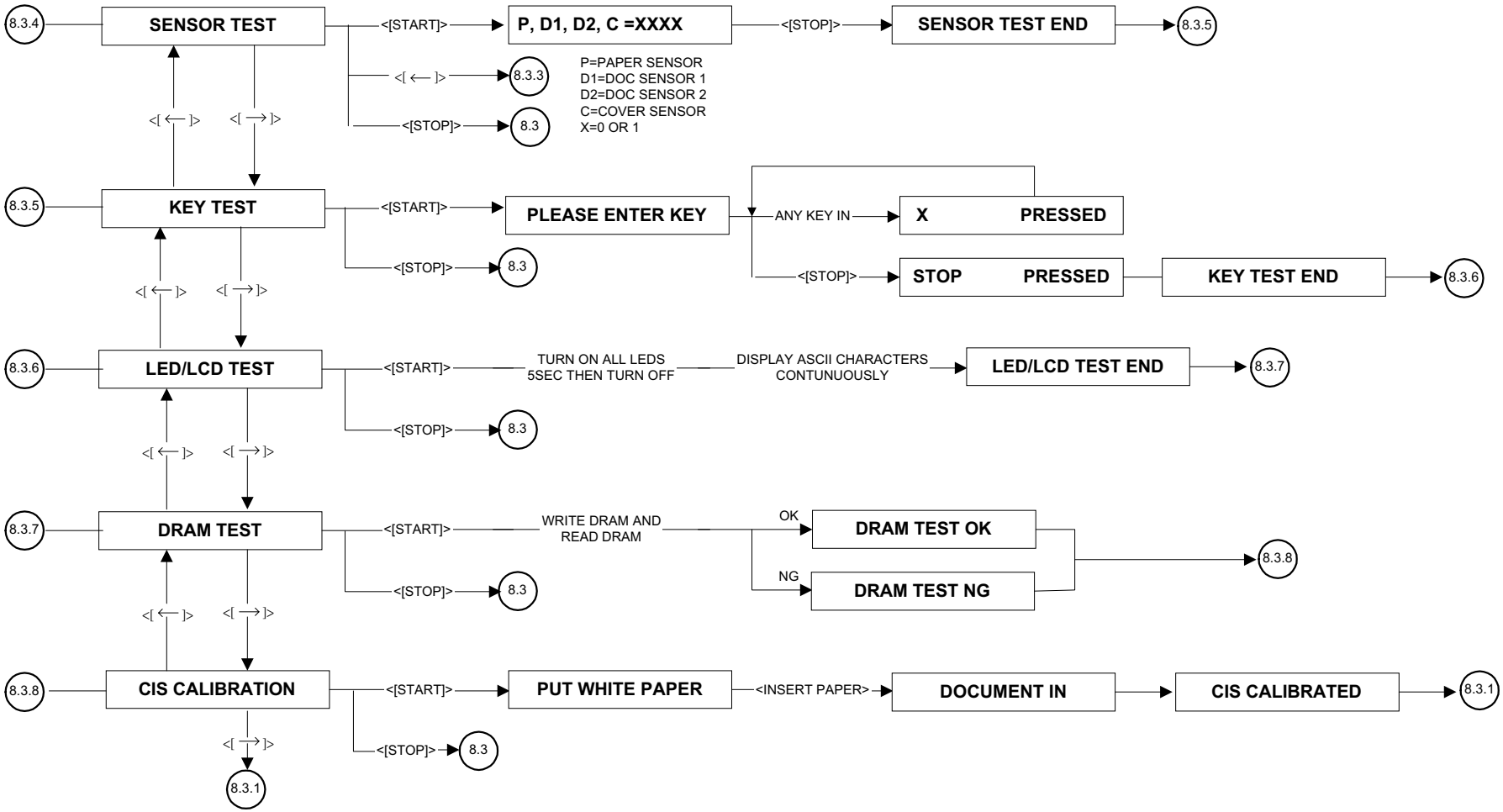

8.1.5
DIAL TONE CHECK
<[START]>
=ON PBX/ON PSTN
<[←] [→]>
CHANGE COMBINATION
<[START]>
UPADATE
8.1.6
<[STOP]>
8.1.5
60
A
<[←]>
8.1.4
<[STOP]>
8.1
<[←]>
<[→]>
8.1.6
BUSY TONE CHECK
<[START]>
=ON PBX/ON PSTN
<[←] [→]>
CHANGE COMBINATION
<[START]>
UPADATE
8.1.7
<[STOP]>
8.1.6
60
A
<[STOP]>
8.1
<[←]>
<[→]>
8.1.7
CNG DETECT
<[START]>
=0 SEC
[← →]
<[←] [→]>
CHANGE DISPLAY (0 SEC) / (1 SEC)
<[START]>
UPADATE
8.1.8
<[STOP]>
8.1.7
60
A
<[STOP]>
8.1
<[←]>
<[→]>
8.1.8
ECM MODE
<[START]>
=ON
[← →]
<[←] [→]>
CHANGE DISPLAY (ON) / (OFF)
<[START]>
UPADATE
8.1.9
<[STOP]>
8.1.8
60
A
<[→]>
8.1.9
<[STOP]>
8.1

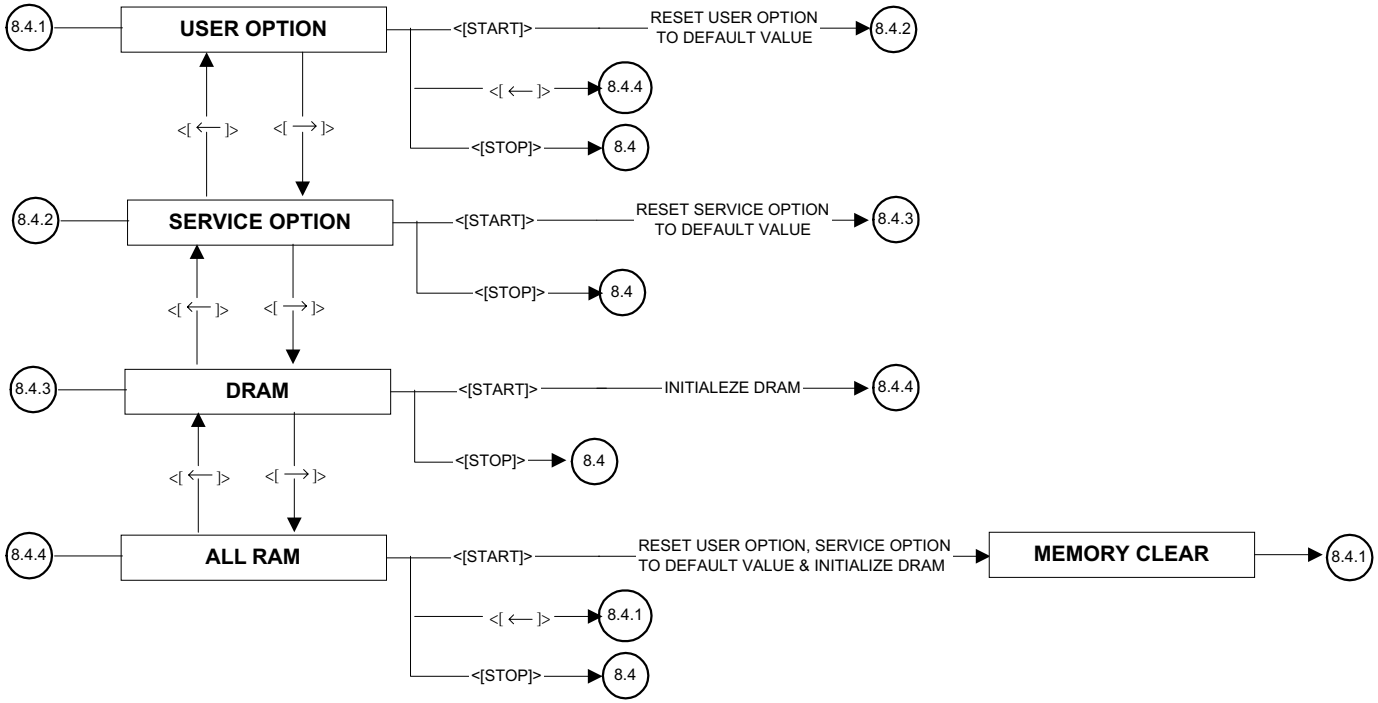

8.1.9
CNG XMT DELAY
<[START]>
=ON [⟵ ⟶]
<[⟵] [⟶]>
CHANGE DISPLAY (ON) / (OFF)
<[START]>
UPADATE
8.1.10
<[STOP]>
8.1.9
60
A
<[⟵]>
8.1.8
<[STOP]>
8.1
<[⟵]>
<[⟶]>
8.1.10
INT'L DIAL TONE
<[START]>
=ON [⟵ ⟶]
<[⟵] [⟶]>
CHANGE DISPLAY (ON) / (OFF)
<[START]>
UPADATE
8.1.11
<[STOP]>
8.1.10
60
A
<[STOP]>
8.1
<[⟵]>
<[⟶]>
8.1.11
T.30 MONITOR
<[START]>
=ON [⟵ ⟶]
<[⟵] [⟶]>
CHANGE DISPLAY (ON) / (OFF)
<[START]>
UPADATE
8.2
<[STOP]>
8.1.11
60
A
<[STOP]>
8.1
<[⟵]>
<[⟶]>
8.1.12
AUTO REDIAL
<[START]>
=1 [⟵ ⟶]
<[⟵] [⟶]>
CHANGE DISPLAY 1~3
<[START]>
UPADATE
8.1.1
<[STOP]>
8.1.12
60
A
<[STOP]>
8.1
<[⟶]>
8.1.1


8.1.13
ERROR AUTO RESET
<[START]>
=ON
[⟵ ⟶]
<[⟵] [⟶]>
CHANGE DISPLAY (ON) / (OFF)
<[⟶]>
<[⟵]>
8.1.12
<[STOP]>
8.1
8.1.1
<[START]>
UPADATE
8.1.1
<[STOP]>
8.1.13
60
A


8.2.1
PRT SERVICE LIST
<[START]>
71
PRINT SERVICE LIST
8.2.2
<[STOP]>
8.2
<[⟵]>
<[⟶]>
8.2.2
PRT TEST PATTERN
<[START]>
71
PRINT TEST PATTERN
8.2.1
<[STOP]>
8.2


8.3.1
SCANNER TEST
<[START]>
ROATE SCANNER MOTOR
5SEC THEN STOP
8.3.2
<[←]>
8.3.8
<[STOP]>
8.3
<[←]>
<[→]>
8.3.2
PRINTER TEST
<[START]>
ROATE PRINTER MOTOR
5SEC THEN STOP
8.3.3
<[STOP]>
8.3
<[←]>
<[→]>
8.3.3
MODEM TEST
<[START]>
<[STOP]>
8.3
<[→]>
8.3.4
TX TONE 1100 HZ
<[START]>
XMTTING 1100HZ
<[STOP]>
<[STOP]>
8.3.3
<[←]>
<[→]>
TX TONE 2100HZ
<[START]>
XMTTING 2100HZ
<[STOP]>
<[STOP]>
8.3.3
<[←]>
<[→]>
TX DTMF
<[START]>
TX DTMF=_
<[0~9, ＊, #]>
CHANGE
DISPLAY
<[STOP]>
<[STOP]>
8.3.3


8.3.4
SENSOR TEST
<[START]>
P, D1, D2, C =XXXX
<[STOP]>
SENSOR TEST END
8.3.5
<[⟵]>
8.3.3
<[STOP]>
8.3
P=PAPER SENSOR
D1=DOC SENSOR 1
D2=DOC SENSOR 2
C=COVER SENSOR
X=0 OR 1
<[⟵]>
<[⟶]>
8.3.5
KEY TEST
<[START]>
PLEASE ENTER KEY
ANY KEY IN
X PRESSED
<[STOP]>
8.3
<[STOP]>
STOP PRESSED
KEY TEST END
8.3.6
8.3.6
LED/LCD TEST
<[START]>
TURN ON ALL LEDS
5SEC THEN TURN OFF
DISPLAY ASCII CHARACTERS
CONTUNUOUSLY
LED/LCD TEST END
8.3.7
<[STOP]>
8.3
8.3.7
DRAM TEST
<[START]>
WRITE DRAM AND
READ DRAM
OK
DRAM TEST OK
NG
DRAM TEST NG
8.3.8
<[STOP]>
8.3
8.3.8
CIS CALIBRATION
<[START]>
PUT WHITE PAPER
<INSERT PAPER>
DOCUMENT IN
CIS CALIBRATED
8.3.1
<[STOP]>
8.3
8.3.1


8.4.1
USER OPTION
<[START]>
RESET USER OPTION
TO DEFAULT VALUE
8.4.2
<[⟵]>
8.4.4
<[STOP]>
8.4
<[⟵]>
<[⟶]>
8.4.2
SERVICE OPTION
<[START]>
RESET SERVICE OPTION
TO DEFAULT VALUE
8.4.3
<[STOP]>
8.4
<[⟵]>
<[⟶]>
8.4.3
DRAM
<[START]>
INITIALEZE DRAM
8.4.4
<[STOP]>
8.4
<[⟵]>
<[⟶]>
8.4.4
ALL RAM
<[START]>
RESET USER OPTION, SERVICE OPTION
TO DEFAULT VALUE & INITIALIZE DRAM
MEMORY CLEAR
8.4.1
<[⟵]>
8.4.1
<[STOP]>
8.4

5. MECHANICAL DISASSEMBLY AND REASSEMBLY

This chapter explains the procedures for replacement of parts, assembles and units in the field.

5.1 General

5.1.1 PRECAUTIONS PARTS REPLACEMENT

(1) Before starting disassembly and re-assembly, always turn the AC power switch OFF, and pull out the AC plug.

(2) Since screws, small parts are likely to be lost, they should temporarily be attached to their original positions.

(3) When handing items such as circuit boards, do not wear gloves that are likely to generate static electricity.

(4) Do not place printed circuit boards directly on the equipment or on the floor.

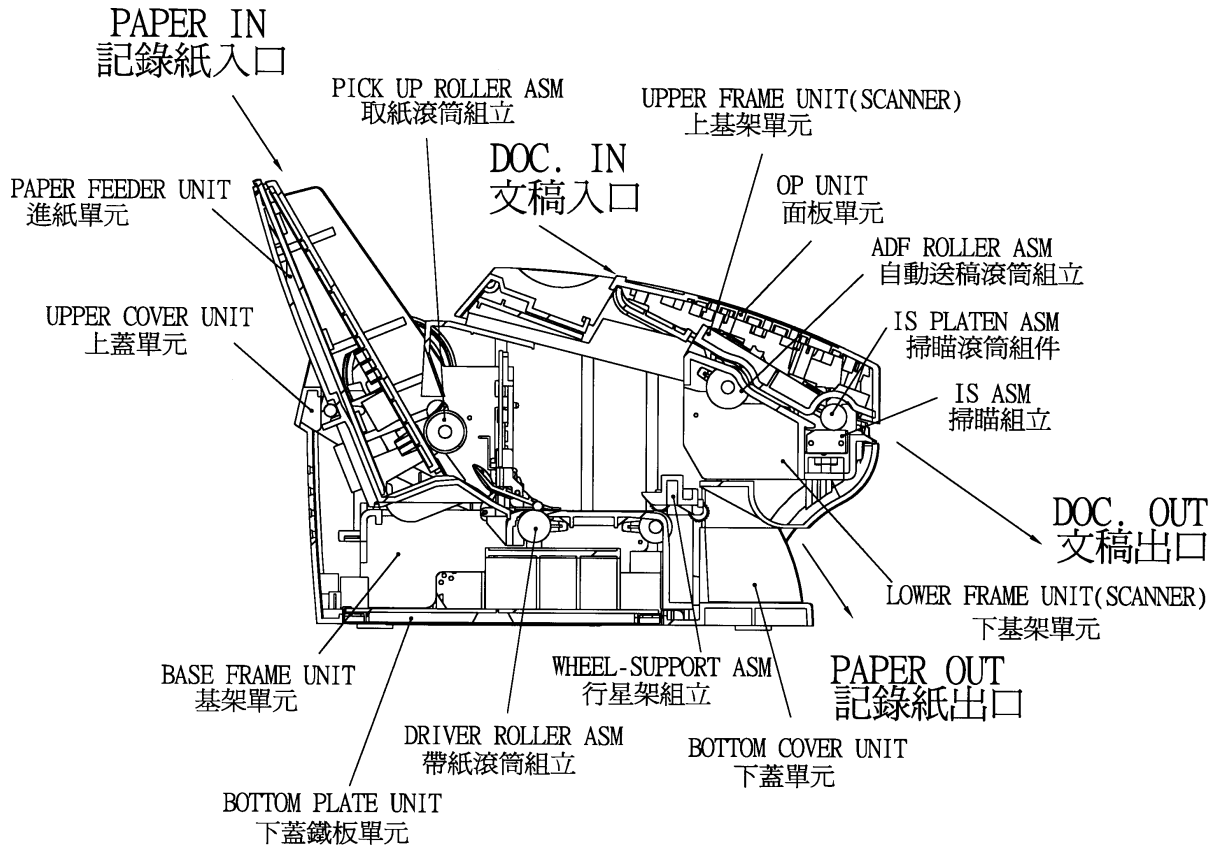
5.1.2 TOOLS

The table shows the tools required for replacement of parts such as circuit boards and mechanical units.

ITEM	SERVICE TOOLS	TYPE	Q'TY	REMARKS
1	PHILIPS SCREWDRIVER (L)	RUBICON 107	1	M3 SCREW
2	PHILIPS SCREWDRIVER (M)	RUBICON 102	1	M2.6 SCREW
3	PHILIPS SCREWDRIVER (S)	RUBICON 104	1	M2.3 SCREW
4	STRAIGHT SCREWDRIVER	RUBICON 101	1	E RING
5	RADIO PLIERS		1	
6	CUTTING PLIERS	4"	1	
7	MULTIMETER		1	SHORT-CIRCUIT TEST
8	DIGITAL STORAGE OSCILLOSCOPE 100MHZ(UP)		1	
9	OFFSET TYPE SCREWDRIVER	NO.2	1	

5.2 General Mechanical Structure

The general mechanical structure of the FAX machine is shown:



5.3 How to Disassemble and Reassemble

This item explains how to dismantle and assemble this FAX machine. **Figure 5-3 Scanner Mode Unit** and **Figure 5-7 Printer Mode Unit**show the procedure flow of dismantlement in brief. The detailed procedure of dismantlement is explained from sub-item 5.3.1 to 5.3.17

The steps of dismantlement, reversing the steps of assembly, are shown as follows. For the convenience of explanation, some definitions are stated as follows:

1) The **Front** of machine means the face of operation panel.

2) The **Left** and **Right** mean the left and right hand side facing from the front of machine.

3) The directions of **Clockwise** and **Counterclockwise** are defined viewing from the right of machine.

5.3.1 Installing the Ink Cartridge and SIM Card

You can buy replacement mono cartridges from all OKI shops, main electrical retailers and good stationers.

Black (item code)

1) After lifting the handset , please open the operational panel directly.

2) To install a new Ink Cartridge. Remove the sealing tape from the printed head.

3) Slide the Ink Cartridge into carriage then push it down.

4) Insert new SIM Card

5) Close the Operational Panel.

5.3.2 AC plug, Handset and Doc. Support

1) Face the rear of machine, pull out the AC plug, handset cord and line cord .

2) Take off the power cord, handset and Doc. Support.

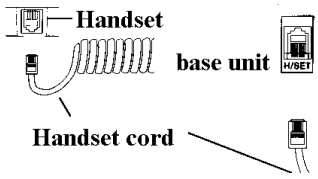


Figure 5-1

5.3.3 Bottom Plate Unit

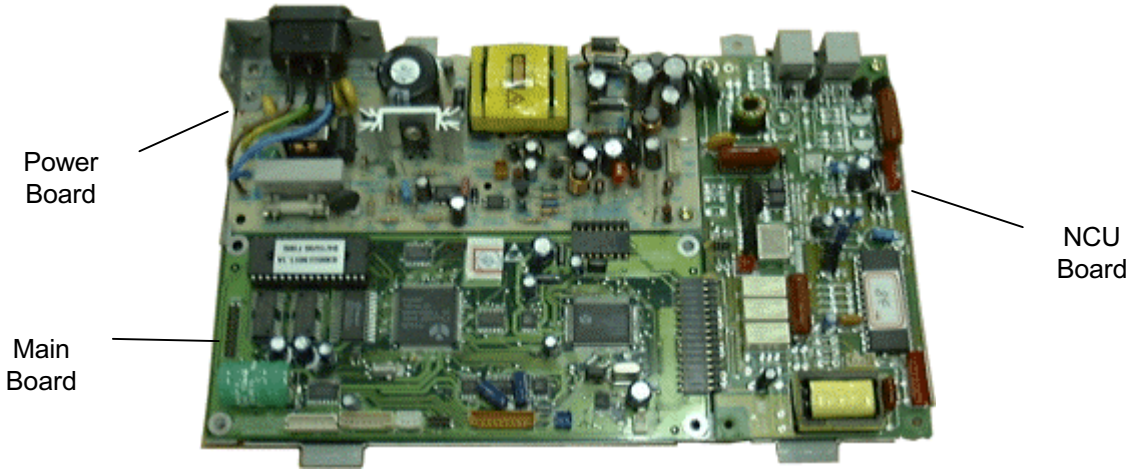


Figure 5-2 Bottom Plate Unit

※ Note:

Put a softer plate on table to avoid operation panel to be scratched is necessary.

1) Face the bottom of machine, loosen 2 pieces of M3X8 tapping screws then open Bottom Plate Asm. from Bottom Cover.

2) Bottom Plate Asm.

Pull out all connectors on Main Board, NCU Board and Power Board , then Bottom Plate Asm. can be taken out from Bottom Cover.

3) NCU Board Asm. , Main Board Asm. , Power Board Asm.

Loosen 4 pieces of M3X6 taptite screw for NCU Board, 2 pieces for Main Board and 2 pieces for Power Board then NCU Board Asm, Main Board Asm. and Power Board Asm. can be taken out from Bottom Plate.

4) Insulation

Take out Insulation sheet from Bottom Plate.

5) Separate Rubber Leg and Insulation Sheet.

5.3.4 SIM Card Holder Assembly

(1)Face the bottom of machine, loosen 1 piece of M3X12 tapping cap screw.

(2)SIM Card Holder Asm

Open Operational Panel, loosen 1 piece of M3X12 tapping cap screw for SIM Card Holder and SIM Card Cover then SIM Card Holder Asm can be take out from machine.

(3)SIM Card Holder, SIM Card Cover and SIM Card PCB Asm.

Loosen 1 piece of M3X8 tapping cap screw for fixing Sim Card Holder and SIM Card Cover then can separate SIM Card Holder, SIM Card Cover and SIM Card PCB AIM.

5.3.5 Scanner Mode Unit

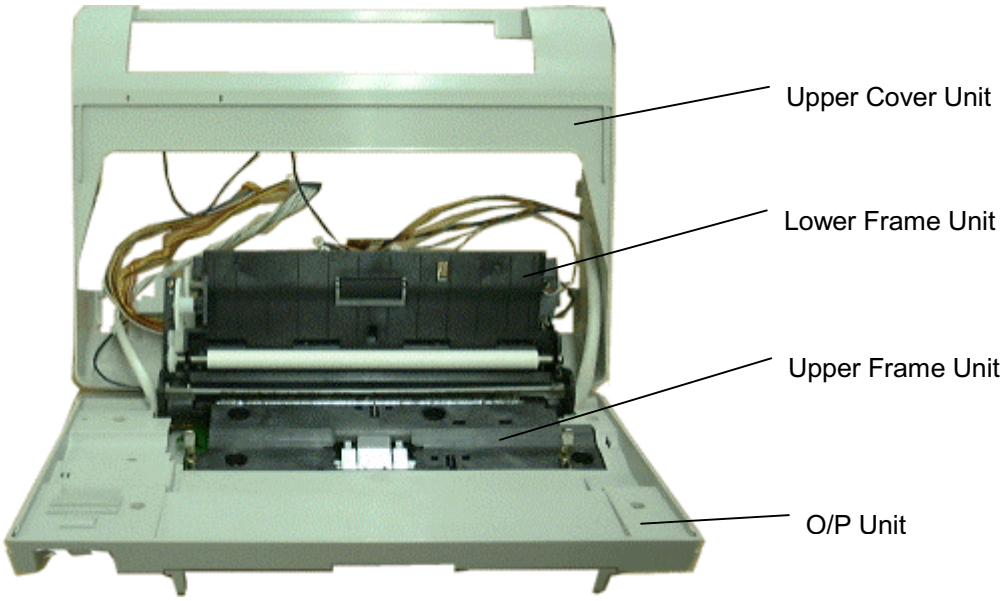


Figure 5-3 Scanner Mode Unit

(1)Open Operational Panel and rotate Pull Tie that fixed on OP Bracket until one side of Pull Tie can be taken out from OP Bracket. Loosen 1 piece ofM3X8 tapping screw that fix another side of Pull Tie on Upper Cover then it can be taken out from Scanner Mode Unit.

(2)Loosen 1 piece of M3X10 tapping screw that fix on right side of Upper Cover and release the 4 latches that fix Upper Cover and Bottom Cover. Lift Scanner Mode Unit and all cables can be

pulled out from Printer Mode Unit then both units can be separated.

(3)Loosen 3 pieces of M3X8 tapping screws that fix Lower Frame and Upper Cover Unit then Scanner Mode Asm. and Upper Cover Unit can be separated.

5.3.6 Scanner Mode Asm.

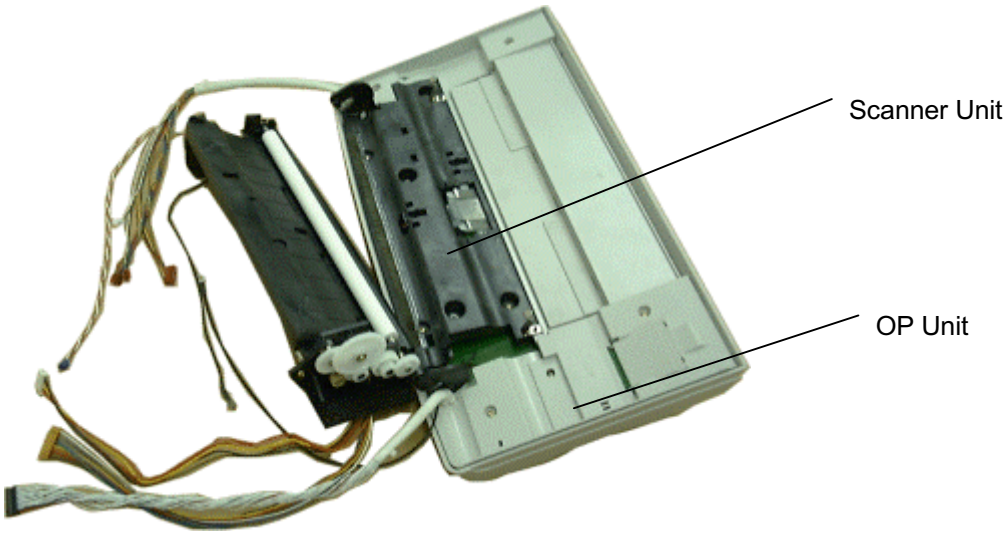


Figure 5-4 Scanner Mode Asm.

Loosen 4 pieces of M3X8 tapping screws that fix Scanner Unit and O/P Unit. Cut the Cable Tie that fasten Ground Wire and Cable Tube on left hand side. Pull out two connectors of ADF sensor and DOC Sensor then Scanner Unit and O/P Unit can be separated.

5.3.7 Scanner Unit

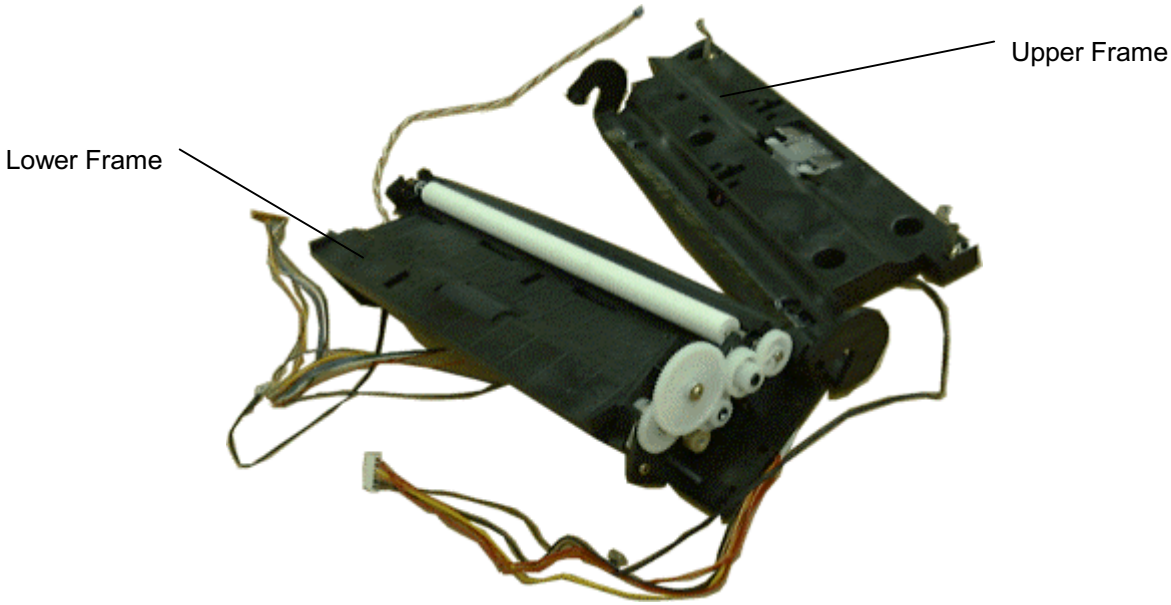


Figure 5-5 Scanner Unit

Rotate 90°of clockwise for Upper Frame Unit then Lower Frame Unit and Upper Frame Unit can be separated.

5.3.8 Lower Frame Unit

(1) Loosen 1 piece of M3X6 tapping screw on right side of I.S. Platen then move Ground Spring.

(2) Loosen 1 piece of M3X6 tapping screw on right side of A.D.F. Roller then move Ground Spring . Take out Ground wire from indent of Lower Frame.

(3) Loosen 1 piece of M2.3X10 tapping screw on right side for fix Cover Switch Sensor then

move Cover Switch Sensor.

(4) I.S. Platen Asesmbly

① Face white I.S. Platen Asm., Gear is located on left side. With a straight screwdriver, pull upward the snap of bushings(green)at the left and right ends of I.S. Platen , and grip bushings with both hands and rotate it upward to vertical direction then take I.S. Platen Asm. out.

② Use finger to release the Snap of Gear then Gear can be separated from the shaft of I.S. Platen.

③ Use small straight screwdriver to pick E-Ring on both side of I.S. Platen then take out left and right bushing.

(5) Loosen 1 piece of M2.6X5 tapping cap screw on spindle of gear than take out 1 piece of 70/20 gear and 2 pieces of 36/20 gear.

(6) I.S. Asesmbly

① Compress both hinges of the I.S. assembly a bit and push the I.S. assembly from left to right until the left hinge can be separated with its spindle on the scanner frame, remove the I.S. assembly from left slantwise.

② Separated I.S. Cable from Tie Mount and pull out the connector of the I.S. cable.

③ Release 4 pieces of M2.6X6 tapping screw on both side of I.S. Asm. then these two Hinges can be separated from I.S.

(7) Loosen 2 pieces of M3X6 taptite screw for fixing I.S. Motor. Separate the cable of Motor then I.S. Motor can be taken out from Lower Frame.

(8) With a straight screwdriver , pull upward the snap of bushings(black) at the left and right ends of the A.D.F shaft, and grip bushings with both hands to take A.D.F. assembly out.

(9) Remove a black bushing on one side of the A.D.F assembly. Release the “E” ring on the outside of gear by straight screwdriver, takes out clutch gear, clutch spring, clutch bushing and another black bushing.

(10)With a straight screwdriver, press the both side of Flat Spring-IS then Flat Springs can be picked out of Lower Frame.

(11)Separate Snap Rivet and flat Spring.

5.3.9 Upper Frame Unit.

(1) Ground Wire

Loosen 1 piece of M3X6 tapping screw. Pull out the ground wire pin of Separation Asm then ground wire can be taken out.

(2) Spring Hook

Loosen both side of M3X6 tapping screws then both spring -hook can be taken out.

(3) A.D.F. sensor Asm.

Release snap-in fingers of ADF sensor assembly by a straight screwdriver then remove the ADF sensor Asm.

(4) DOC. sensor Asm.

Release snap-in fingers of DOC. sensor assembly by a straight screwdriver then remove the DOC. sensor Asm.

(5) Separation Asm.

① Take out A.D.F. Extension Spring from Upper Frame.

② With a straight screwdriver, take out Separation Asm.

(6)Push up clamping plate then separation plate and backing plate can be pulled out.CIRCUIT DISCRIPTION

5.3.10 Document Guide Assembly

(1)Use a straight screwdriver to separate Operational Panel and Doc. Guide Asm.

(2)Setting Spring & Spur Gear

Press downward the Setting Spring and move to longer side. Then Setting Spring and Spur Gear can be taken out at the same time.

(3)DOC. Guide

① Lift slightly and pull the left Document Guide outward to take it out.

② Lift slightly and pull the right Document Guide outward to take it out.

(4)DOC. Setting Lable

DOC. Setting Lable can be scratched from DOC. Bracket.

5.3.11 Operation Panel Unit

Figure 5-6 Operation Panel Unit

(1)O/P Bracket & Hook Switch Assembly

With a cross screwdriver, loosen 5 pieces of M3X8 tapping screw for fixing O/P Bracket. Then O/P Bracket can be taken out from O/P Asm. At the same time, pull out Hook Switch Asm. from O/P Bracket.

※ **Note:**

Put a softer plate on table to avoid operation panel to be scratched is necessary.

(2)Pull out connectors on the key board and hook switch board . Take out cable from two mounts.

(3)Buzzer

Loosen two pieces of M2X6 tapping screw for fixing buzzer then buzzer can be taken out.

(4)Key Board, Key Pad, Number Key, Function Key, Facility Key, Stop Key, Start/Copy Key

Use a small cross screwdriver to loosen 10 pieces of M2X6 tapping screw for fixing Key Board then Key Board, Key Pad, Number Key, Function Key, Facility Key, Stop Key, Start/Copy Key can be taken out respectively.

(5)Display Panel

Use a straight screwdriver to pick Display Panel from the gap between Display Panle and O/P on right or left side.

(6)Use a straight screwdriver or finger to peel Quickdial Card Cover from the gap on right side then pick Quickdial Card.

5.3.12 Upper Cover Unit

(1)Paper Sensor assembly and Bottom Cover

Release snap-in fingers of Paper Sensor Asm. by a straight screwdriver, then can separate Paper Sensor Asm. and Bottom Cover.

5.3.13 Printer Mode Unit

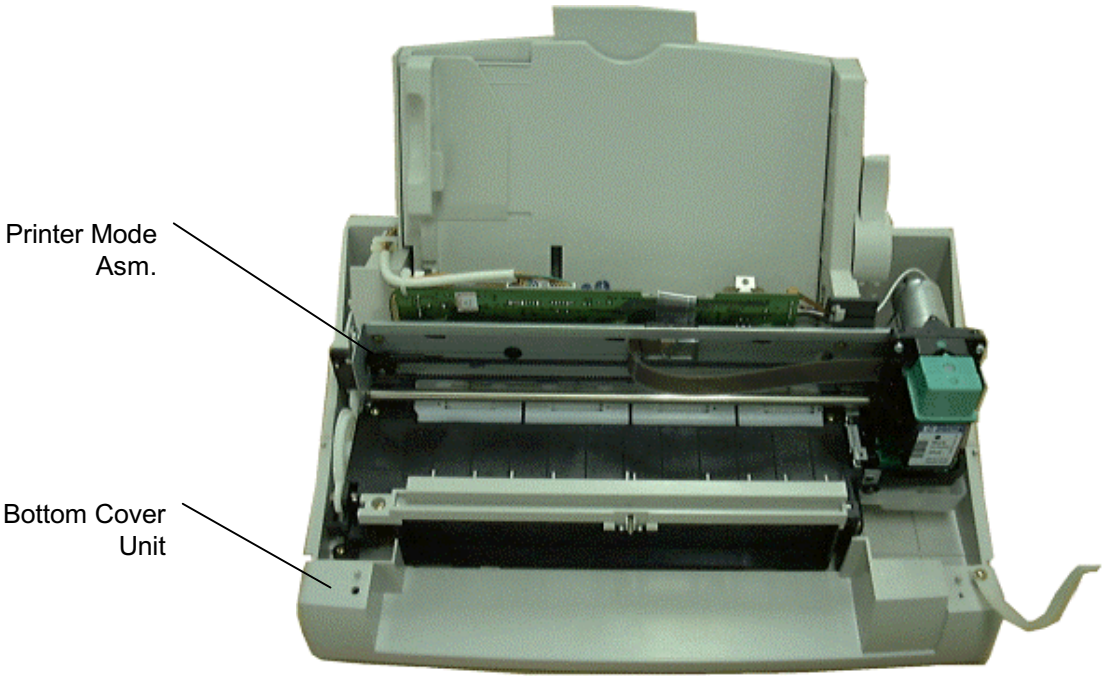


Figure 5-7 Printer Mode Unit

(1) Printer Mode Asm. & Bottom Cover Unit

Loosen 4 pieces of M3X10 tapping screw then Printer Mode Asm. can be taken out form Bottom Cover Unit.

5.3.14 Printer Mode Asm.

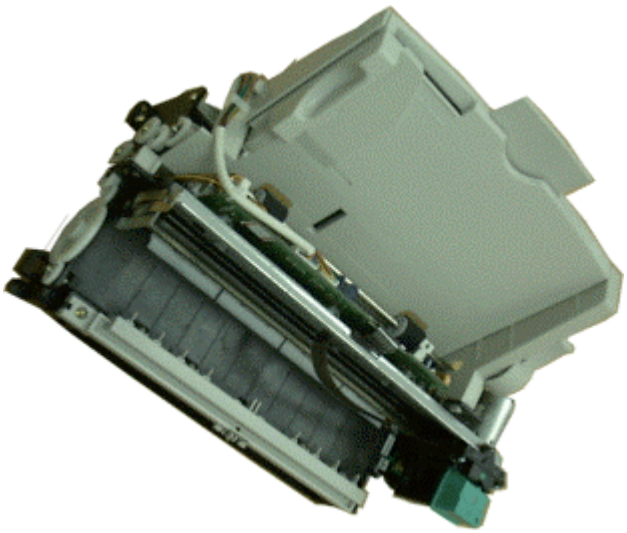


Figure 5-8 Printer Mode Asm.

(1) Ground Wire

Loosen 1 piece of M3X6 tapping screw for fixing ground wire by a cross screwdriver then ground wire can be taken out from Printer Bar.

(2) Loosen 2 pieces of M3X10 tapping cap screw on right and left side of Paper Feeder Unit with

a cross straight screwdriver.

(3) Loosen 2 pieces of M3X14 tapping cap screw(with a Star Washers on both side screw) on right and left side of Base Frame Unit with a cross straight screwdriver then Paper Feeder Unit and Base Frame Unit can be separated.

5.3.15 Paper Feeder Unit

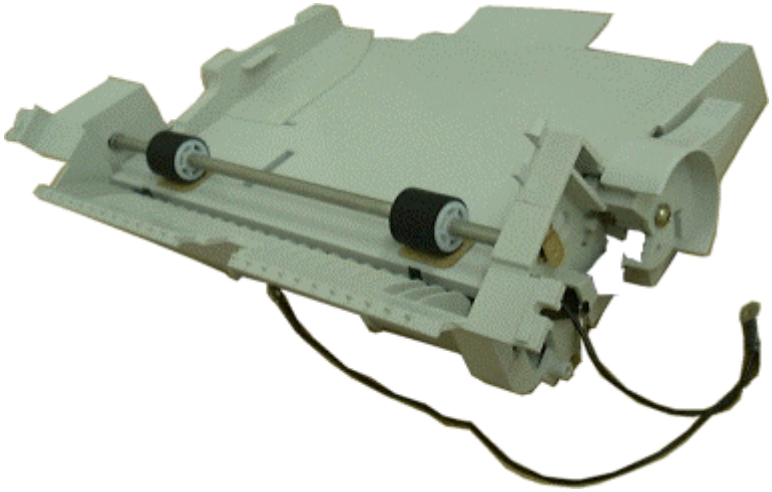


Figure 5-9 Paper Feeder Unit

(1) Ground Spring & Ground Wire

Loosen 1 piece of M2.6X5 tapping cap screw on Handle side by cross screwdriver then Ground Spring and Ground Wire can be taken out from Paper Feeder Unit.

(2) Pick Roller Clutch & E-ring

Face the Gear-Pick Up side of Paper Feeder Unit. Release the E- ring (Φ4)on the outside of gear by straight screwdriver then take out Pick Up Roller Clutch and E-ring.

(3) E-ring

Release the E- ring (Φ4) on the both side of Paper Feeder Unit by straight screwdriver then take out E-ring.

(4) Sintering Bearing

Move outward two Sintering Bearing then take them out.

(5) Pick Up Roller Asm.

Remove Pick Up Roller Asm. leftward then upward. Pick Up Roller Asm. can be taken out from Paper Feeder Unit.

(6) Handle & Spring-Handle

Face the Handle side of the Paper Feeder Unit. Loosen 1 piece of M3X6 taptite cap screw by cross screwdriver then it and Spring-Handle can be taken out.

(7) Spring-Buckle Corner

Take out Spring-Buckle Corner by hook.

(8) Buckle Corner

Face the Plane-Knock Up. Pull Buckle Corner up and outward then it can be taken out.

(9) Plate –Knock Up

Hold left side of Frame-AFP by left hand. Wrench left side of Plate-Knock up by thumb of right hand then fixed position pin of Plate-Knock Up will be taken out. Face the rear of Frame-APF, release the snap of Plate-Knock Up from Linkage then Plate-Knock Up can be taken out from Frame-APF.

(10) Paper Support

Pull Paper Support to highest point. Widen the gap that between Frame and Paper Support by straight screwdriver then Paper Support can be drawn out from Frame.

(11) Spring-Knock Up

Pull out two Springs-Knock Up from Frame-APF.

(12) Linkage

Face the rear of Frame-AFP, pull linkage out from snap of Frame.

(13) Paper Guide-APF

Face the bear of Plate, pull out the elastic snap by straight screwdriver then Paper Guide can be taken out from Plate.

(14) Cork Plate

Pull out Cork Plates from Plate.

5.3.16 Base Frame Unit

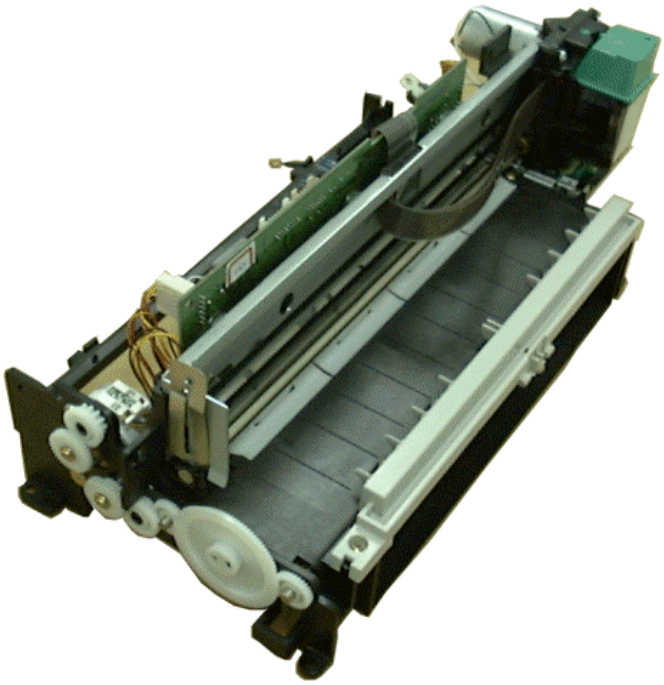


Figure 5-10 Base Frame Unit

(1) Idle roller

Release 2 pieces of M3X 6 taptite screws from Printer Control Board for fixing Paper guide Asm. then it can be taken out from Printer Bar. Take 4 Idle Roller out from Baseframe.

(2) Paperguide Asm.

① Snap out 4 pieces of Spring from Paperguide Frame by Spring-Hook.

② Paperguide Pin, Paperguide Frame, Paperguide

Draw out Paperguide Pin from Paperguide then Paperguide Frame and Paperguide can be separated.

③ Spring-Paperguide

Take out 4 pieces of Spring-Paperguide from Paperguide.

(3) APF Sensor Asm.

Pull out all connectors on Printer Control Board. Release snap-in fingers of APF sensor assembly by a straight screwdriver, remove the AFP sensor assembly.

(4) Paper Motor:

① Cut Cable Tie for Fixing Cable Asm.

② Loosen 2 pieces of M3X6 taptite screws, remove the motor.

(5) Gear A, Gear B, Gear C

Release 2 pieces of M2.6X5 tapping screw then Gear B(2X), GEAR A and Gear C can be taken out in sequence.

(6) Gear D, Driver Roller Gear

Release the snap of Gear D for fixing on Baseframe then Gear D and 2 pieces of Driver Roller Gear can be taken out from Baseframe.

(7) Print Bar

Release 2 pieces of M3X6 tapping screw for fixing Printer Bar. Remove Print Bar Upward and Forward then it can be taken out from Bracket-BF-L&R.

(8) Printer Control Board

① Drop Detect Cable

Pull out both connectors that connect Service Station and Printer Control Board then Drop Detect Cable can be taken out.

② Release Flex Cable connector then Carriage Flex Cable can be taken out from Printer Control Board.

③ Release 2 pieces of M3X6 taptite screw for fixing Printer Control Board then it can be taken out from Print Bar.

(9) Bracket-Bf-R

Release 2 pieces of M3X6 tapping Screw for fixing Bracket-bf-R on Base Frame then it can be taken out.

(10) Bracket-Bf-L

Release 3 pieces of M3X6 tapping Screw for fixing Bracket-bf-L on Base Frame then it can be taken out.

(11) Ground Spring & Ground Wire

Release 2 pieces of M3X6 tapping screw for fixing Ground Spring(2X) and Ground Wire then they can be taken out.

(12) Driver Roller

Face the bottom of Base Frame. With a straight screwdriver, pull upward the snap bushings at the left and right ends of Driver Roller and grip bushings with both hands to take it out.

(13) Exit Roller

Face the bottom of Base Frame. With a straight screwdriver, pull upward the snap bushings at the left and right ends of Exit Roller and grip bushings with both hands to take it out.

(14) Wheel Support Asm.

① Release 1 piece of M3X8 tapping Screw. Lift left side of Wheel Support then it can be taken out from fixed position on Base Frame.

② Star Wheel, Star Wheel Spring & Wheel Support

Take out 6 pieces of Star Wheel Spring and Star Wheel from Wheel Support.

5.3.17 Bottom Cover Unit

(1) Speaker Asm.

Release the snap for fixing Speaker Asm. then it can be taken out from Bottom Cover.

(2) EVA-Speaker 1 & EVA-Speaker 2

Pull EVA-Speaker 1 and EVA-Speaker 2 from speaker.

(3) Socket-616E Cable Asm.

Release 2 snap for fixing Socket-616E Cable Asm. then it can be taken out from Bottom Cover.

(4) Rubber Leg

Face the bottom of Bottom Cover. Take out 4 pieces of Rubber Leg.

6. CIRCUIT DESCRIPTION

6.1 Main Board Circuit Description (TF-300P, VIENNA 1)

The Main Board version is the first version that begins mass-production and the circuit diagrams consists of 11 schematics, which are described in the following sections.

6.1.1 Block Diagram

The extended FAXENGINE chip set consists of an Integrated Fax Controller FC200 and a modem chip (R96DFXL). The FC200 performs all common facsimile machine control, monitor and interface function. Additionally, it contains scanner, printer, keyboard, stepping motor and modem interfaces. These programmable functions and interfaces support a wide range of peripherals. Integrated 8 bit pipeline ADC, clamp, sample hold and AGC allow minimum external scanner interface hardware. Built-in DLC and shading correction combined with two-dimensional Error Diffusion and two-dimensional edge enhancement provides state-of-the-art image processing performance in half-tone modes. The R96DFXL modem can execute modem can excu 9600bps fax transmission and reception.

6.1.2 Integrated Fax Controller

The Advanced extended FAXENGINE Integrated Fax Controller (FC200) includes following features.

1) Microprocessor.

The embedded processor MC24TM in FC200 provides 16-Mbyte memory addressing capability over 24-bit address/8-bit data bus and dedicated control lines.

2) Printer Interface Control.

The FC200 supplies programmable strobe and control signals that interface with most, if not all, thermal printers. In addition to Standard (non-Split) printing mode, latchless Split-printing mode and latchless two-clock mode can be supported. The three signals PDAT, PCLK, and PLAT control the transfer of data to the printer.

3) Scanner Control.

Four programmable control and timing signals supports CIS scanner interface. An internal 8-bit A/D converter is provided. Video processing supports DLC and two modes of shading correction for scanner data non-uniformity's arising from uneven sensor output or uneven illumination. Correction may be provided to an 8-pixel group at a time or, separately to each pixel. Less than 1 K of RAM is required to support shading correction. A Digital Adaptive Halftone image processing is supported. A 2-Dimensional error diffusion algorithm as well as a 2-D Edge Enhancement control are performed in the hardware. Dynamic background and contrast control is provided for text images. Multi-level horizontal B4 to A4 reduction is also provided for the scanner data.

4) Motor Control.

Eight outputs are provided to external current drivers; four for scanner motor.

5) Image Coding Schemes.

FC200 provides MMR data compression and decompression conformed with ITU-T recommendation T.4.

6) Real Time Clock (RTC).

FC200 includes a battery backed-up real time clock. The life of the RTC is 32 years, and leap year compensation is automatic.

7) External Memory Support.

External ROM stores the program object code. External RAM is used by processor for shading correction and line buffer. DRAM controller supports refresh during battery operation. DRAM stores image and voice data.

8) Modem Interface.

FC200 runs at a clock derived from modem clock. FC200 immediately handles interrupt request from modem in order to keep constant transmission flow.

9) Panel Interface.

Four inputs, eight strobe outputs, and two control outputs support keys scan and LCD driver.

10)Battery and Power.

FC200 detects power failure and switches to battery backed-up mode.

Table 6-1 FC200 Pin Assignments

Pin Name	Pin No.	I/O	Input Type	Output Type	Pin Description (Note: Active low signals have an "n" pin name ending.)
CPU Control Interface					
MIRQn	135	I	HU	--	Modem interrupt, active low. (Hysteresis In, Internal Pullup.)
SYSCLK	133	I	H	--	System clock. (Hysteresis In.)
TSTCLK	130	O	--	123XT	Test clock.
Bus Control Interface					
A[23:0]	[1:6][8:13] [15:20][22:27]	O	TU	123XT	Address bus (24-bit)
D[7:0]	[136:139] [141:144]	I/O	TU	123XT	Data bus (8-bit)
RDn	128	O	--	123XT	Read strobe.
WRn	127	O	--	123XT	Write strobe.
ROMCSn	120	O	--	123XT	ROM chip select.
CS1n	122	O	--	123XT	I/O chip select.
CS0n	57	O	--	123XT	SRAM chip select. (Battery powered.)
MCSn	121	O	--	123XT	Modem chip select.
SYNC	126	O	--	123XT	Indicates CPU op code fetch cycle (active high).
REGDMA	124	O	--	123XT	Indicates REGSEL cycle and DMA cycle.
WATTn	125	O	--	123XT	Indicates current TSTCLK cycle is a wait state or a halt state.
RASn	113	O	--	123XT	DRAM row address select. (Battery powered).
CAS[1:0]N	[111:112]	O	--	123XT	DRAM column address select. (Battery powered.)
DWRn	109	O	--	123XT	DRAM writ. (Battery powered.)
Prime Power Reset Logic and Test					
DEBUGn	129	I	HU	--	External non-maskable input (NMI).
RESETn	131	I/O	HU	2XO	FC200 Rest.
TEST	58	I	C	--	Sets Test mode (battery powered).
Battery Power Control and Reset Logic					
XIN	59	I	OSC	--	Crystal oscillator input pin.
XOUT	60	O	--	OSC	Crystal oscillator output pin.
PWRDWNn	62	I	H	--	Used by external system to indicate--to FC200--loss of prime power. (Results in NMI).
BATRSTn	61	I	H	--	Battery power reset input.
WRPROTn	110	O	--	1XC	(Battery powered.) Write protect during loss of VDD power. NOTE: The functional logic is powered by battery power, but the output drive is powered by DRAM battery power.
Scanner Interface					
START	101	O	--	2XS	Scanner shift gate control.
CLK1	100	O	--	2XS	Scanner clock.
CLK1n	99	O	--	2XS	Scanner clock-inverted.
CLK2	98	O	--	2XS	Scanner reset gate control (or clock for CIS scanner).

Pin Name	Pin No.	I/O	Input Type	Output Type	Pin Description (Note: Active low signals have an “n” pin name ending.)
FCS1n /VIDCTL0	96	O	--	2XT	Flash memory chip select or video control signal.
FCS2n /VIDCTL1	97	O	--	2XT	Flash memory chip select or video control signal.
Printer Interface					
PCLK /DMAACK	29	O	--	3XC	Thermal Print Head (TPH) clock or external DMAACK.
PDAT	30	O	--	2XP	Serial printing data (to TPH).
PLAT	31	O	--	3XP	TPH data latch.
STRB[3:0]	[33:36]	O	--	1XP	Strobe signals for the TPH.
STRBPOL /DMARQ	37	I	C	--	Sets strobe polarity, active high/low , or external DMA request.
Operator Panel Interface					
OPO[5]/GPO[13]	40	O	--	2XL	Keyboard/LED strobe [5] or GPO[13]
OPO[6]/GPO[14]	39	O	--	2XL	Keyboard/LED strobe [6] or GPO[14]
OPO[7]/GPO[15]	38	O	--	2XL	Keyboard/LED strobe [7] or GPO[15]
OPI[0]/GPIO[21]/SSRXD1	52	I/O	HU	2SC	(Pullup, Hysteresis In.) Keyboard return [0] or GPIO[21] or SSRXD1 (for SSIF1)
OPI[1]/GPIO[22]/SSSTAT1	51	I/O	HU	2SC	(Pullup, Hysteresis In.) Keyboard return [1] or GPIO[22] or SSSTAT1 (for SSIF1)
OPI[2]/GPIO[23]/SSCLK1	50	I/O	HU	2SC	(Pullup, Hysteresis In.) Keyboard return [2] or GPIO[23] or SSCLK1 (for SSIF1)
OPI[3]/GPIO[24]	49	I/O	HU	2SC	(Pullup, Hysteresis In.) Keyboard return [0] or GPIO[21]
LEDCTL	55	O	--	4XC	Indicates outputs OPO [7:0] are for LEDs.
LCDCS	54	O	--	1XC	LCD chip select.
General Purpose I/O					
GPIO[0]	94	I/O	H	2XC	(Hysteresis In) GPIO[0].
GPIO[1] /SASTXD	93	I/O	H	2XC	(Hysteresis In) GPIO[1] or SASTXD (for SASIF).
GPIO[2] /SASRXD	92	I/O	H	2XC	(Hysteresis In) GPIO[2] or SASRXD
GPIO[3] /SASCLK	91	I/O	H	2XC	(Hysteresis In) GPIO[3] or SASCLK
GPIO[4] /CPCIN	90	I/O	H	2XC	(Hysteresis In) GPIO[4] or Calling Party Control Input
GPIO[5 /SSCLK2	89	I/O	H	2XC	(Hysteresis In) GPIO[5] or SSCLK2
GPIO[6] /SSTXD2	87	I/O	H	2XC	(Hysteresis In) GPIO[6] or SSTXD2 (for SSIF2).
GPIO[7] /SSRXD2	86	I/O	H	2XC	(Hysteresis In) GPIO[7] or SSRXD2 (for SSIF2)
GPIO[8] /FWRn	85	I/O	H	2XC	(Hysteresis In) GPIO[8] or flash write enable signal for NAND-type flash memory.

Pin Name	Pin No.	I/O	Input Type	Output Type	Pin Description (Note: Active low signals have an “n” pin name ending.)
GPIO[9] /FRDn	84	I/O	H	2XC	(Hysteresis In) GPIO[9] or flash read enable signal for NAND-type flash memory.
GPIO[10]/ SSSTAT2	83	I/O	H	2XC	(Hysteresis In) GPIO[10] or SSSTAT2
GPIO[11]/BE /SERINP	82	I/O	H	1XC	(Hysteresis In) GPIO[11] or bus enable or serial port data input for autobaud detection.
GPIO[12] /CS[2]n	80	I/O	H	2XC	(Hysteresis In) GPIO[12] or I/O chip select [2].
GPIO[13] /CS[3]n	79	I/O	H	2XC	(Hysteresis In) GPIO[13]or I/O chip select [3].
GPIO[14] /CS[4]n	78	I/O	H	2XC	(Hysteresis In) GPIO[14] or I/O chip select [4].
GPIO[15] /CS[5]n	77	I/O	H	2XC	(Hysteresis In) GPIO[15] or I/O chip select [5].
GPIO[16] /IRQ[8]	76	I/O	H	1XC	(Hysteresis In) GPIO[16] or external interrupt 8.
GPIO[17]	75	I/O	H	1XC	(Hysteresis In) GPIO[17]
GPIO[18] /IRQ[9]n	74	I/O	H	1XC	(Hysteresis In) GPIO[18] or external interrupt 9.
GPIO[19]/RDY/SEROUT	73	I/O	H	1XC	(Hysteresis In) GPIO[19] or ready signal or Serial port data output for autobaud detection.
GPIO[20]/ ALTTONE	107	I/O	H	1XC	(Hysteresis In) GPIO[20] or ALTTONE.
Miscellaneous					
SM[3:0]/ GPO[7:4]	[103:106]	O	--	1XC	Programmable: scan motor control pins or GPO pins.
PM[3:0]/ GPO[3:0]	[115:118]	O	--	1XC	Programmable: print motor control pins or GPO pins.
TONE	119	O	--	1XC	Tone output signal.
Power. Reference Voltages. Ground					
-Verf /CLREF	66	I	-VR	--	Negative Reference Voltage for Video A/D.
ADXG	68	I	VXG	--	A/D Internal GND.
ADGA	69		VADG		A/D Analog Ground.
ADVA	70		VADV		A/D Analog Power.
ADGD	72		VADG		A/D Digital Ground.
+Vref	71		+VR		Positive Reference Voltage for Video A/D.
VIN	67	I	VA	--	Analog Video A/D input.
THADI	65	I	TA	--	Analog Thermal A/D input.
VSS(12)	7,21,28,45,53,56,64,88,95,108,132,134				Digital Ground.
VDD(8)	14,32,41,48,81,102,123,140				Digital Power.
VBAT	63				Battery power for DRAM refresh.
VDRAM	114				DRAM Battery Power

Table 6-2 FC200 Signal Characteristics

Input Signal Characteristics					
Input Type	**Description**	**VIL (V max.)**	**VIH (V min.)**	**Hysteresis (V min.)**	**Pullup Resistance(K ohm)**
C	CMOS input	0.3*VDD	0.7*VDD	-	-
H	Hysteresis	0.3*VDD	0.6*VDD	1.0	-
HU	Hysteresis/Pull up	0.3*VDD	0.6*VDD	1.0	35-150
T	TTL input	0.8	2.0	-	-
TU	TTL/Pull up	0.8	2.0	-	35-150
OSC	CMOS input	0.3*VDD	0.7*VDD	-	-

Absolute Input Range = -0.5 to VDD+0.5					
Input Type	**Description**	**Operating (V min.)**	**(V max.)**	**Absolute (V min.)**	**(V max.)**
TA	Thermal A/D input	0.2*VDD	0.8*VDD	-0.5	VDD+0.5
VA	Video A/D input	-VR	+VR	-0.5	VADV+0.5
+VR	Video A/D +Vref	0.8	3.3	-0.5	VADV+0.5
-VR	Video A/D -Vref	-0.2	2.0	-0.5	VADV+0.5
VXG	Video Internal ground	--	--	--	--
VADV	Video A/D power	VDD-0.1	VDD+0.1	-0.5	7.0
VADG	Video A/D ground	-0.1	0.1	-0.5	0.5
VDD	Digital power	4.5	5.25	-0.5	7.0
GND	Digital ground	0	0	0	0
VDRAM	Battery power for DRAM	2.25	5.25	-0.5	7.0
VBAT	Battery power for RTC/SRAM	2.25	5.25	-0.5	7.0

Output Signal Characteristics						
Output Type	**Description**	**VOL (V max)**	**IOL (mA min)**	**VOH (V min)**	**IOH (mA min)**	**CL (pF max)**
1XC	CMOS output (1X)	0.4	1.6	VDD-1.5	1.6	50
1XP,2XP	High capacitance driver	0.4	1.6	VDD-1.5	1.6	200
2XC	CMOS output (2X)	0.4	3.5	VDD-1.5	3.5	50
2XT	TTL output (2X)	0.4	4	2.4	4	50
2XS	CMOS output (2X)	0.4	3.5	VDD-1.5 1.5	3.5 15	50 50
2XL	LED driver	0.7	10	VDD-1.5	3.5	100

2XO	CMOS output, Open drain	0.4	3.5	N/A	N/A	50
3XC	CMOS output (3X)	0.4	6	VDD-1.5	6	50
3XP	High capacitance driver (3X)	0.4	6	VDD-1.5	6	700
4XC	CMOS Output (4X)	0.4	12	VDD-1.0	12	50
123XTT	1/2/3X (Tristate) output	0.4	1.6/4/6	2.4	1.6/4/6	50

Table 6-3 FC200 Memory Map

Chip select	Address (Hex)	External to FC200	Internal to FC200
CS0	000000-007FFF	SRAM	
	00E000-00FBFF		RAM
CS1	00FC00-00FCFF	I/O (N/C)	
CS2-CS4	00FD00-00FDFF	I/O (N/C)	
	00FE00-00FEFF		RESISTERS
MCS	00FF00-00FFFF	Modem	
FCS1	300000-3FFFFF	FLASH MEMORY	
FCS2	200000-2FFFFF	FLASH MEMORY	
CAS0- CAS1	400000-BFFFFF	DRAM or ARAM	
CS5	D00000-DFFFFF	I/O (N/C)	
ROMCS	FE0000-FFFFFF	ROM	

6.1.2.1. Bus Cycle Timing

The processor and external bus cycle timing is defined by **bclk** (an internal signal). **bclk** is referenced to **TSTCLK** which is derived by dividing **SYSCLK** by either 2 or 3, as shown in Figure 6-1 and Figure 6-2 respectively. **bclk** can be extended low (halted state) or stretched high (wait state) by external and internal conditions that are described later. Both halt and wait state are indicated on the external pin WAITn.

A standard bus cycle begins at the falling edge of **TSTCLK** and ends at the falling edge of the next **TSTCLK.** Some memory and peripheral devices require extended bus cycle, which is accomplished by adding wait states. During wait states, the WAITn signal is activated. Wait states can be created with programmable control provided for external chip selects (ROMCSn, MCSn, CS [5:0]n), by the DRAM controller (CAS[1:0]n),and with the external RDY input pin. The wait states created by the RDY input are added to the wait states generated by the chip select control logic.

The bus cycle can be halted by BE pin or by an access conflict (i.e., a CPU or DMA access to DRAM coincident with a DRAM refresh, or a CPU access to the RAM when a DMA access of the same RAM is in progress). When the bus cycle is stopped, Halt states are added in increments of 1 **TSTCLK**. When the Halt condition is released, the bus cycle resumes at the next **TSTCLK** rising edge **Figure 6-2** shows an example of a bus cycle with 1Halt state.

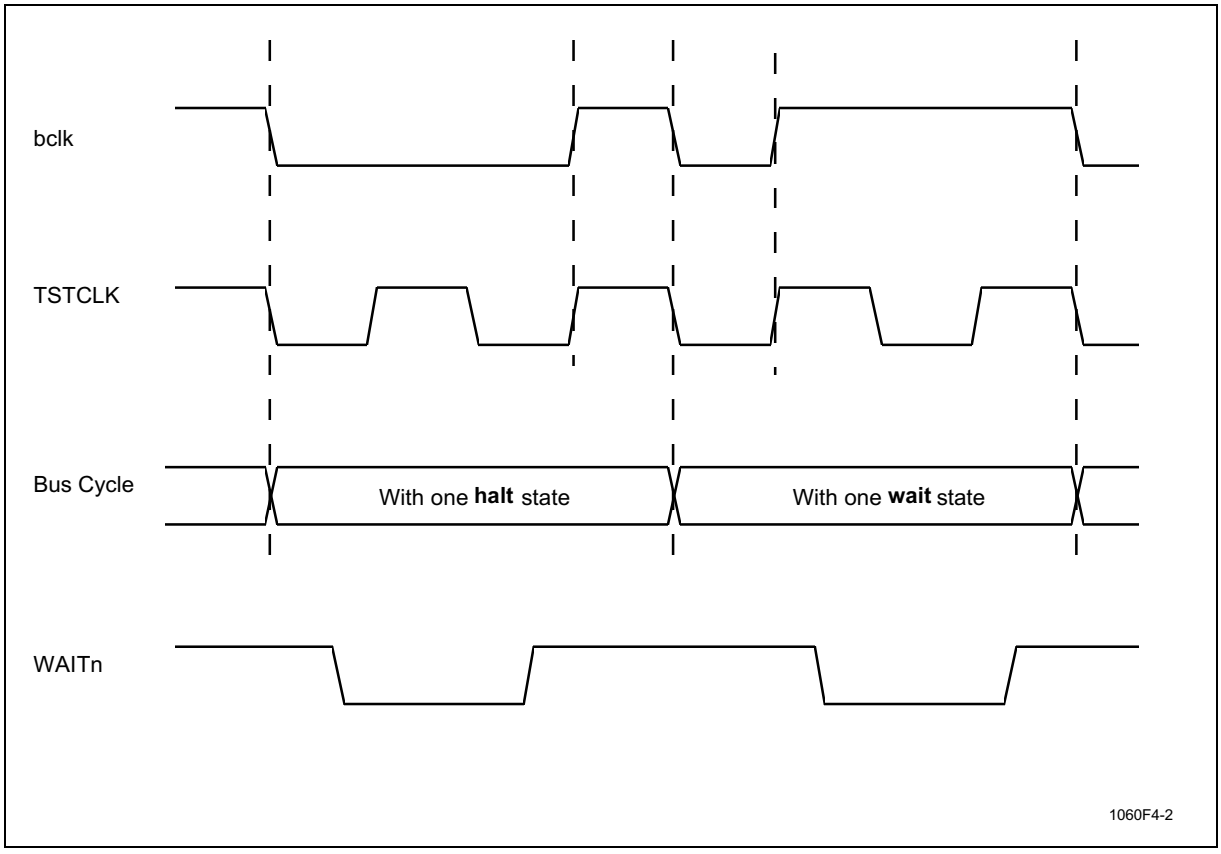


Figure 6-1 Bus Cycle (Divide by 2)

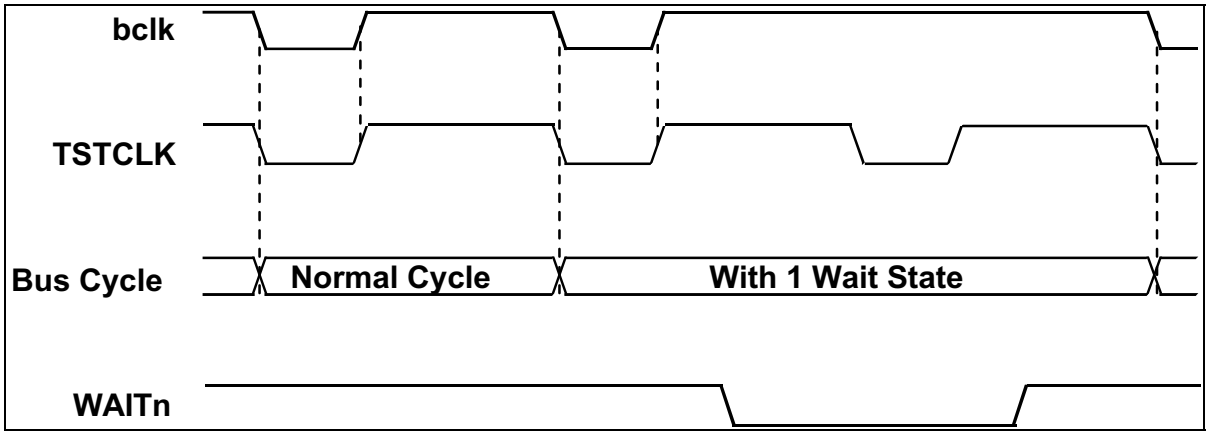


Figure 6-2 Bus Cycle (Divide by 3)

6.1.2.2. External Bus Signal Timing

External bus clock and control timing is provided in **Figure 6-3**. External bus data access timing is provided in **Figure 6-4**, and **Table 6-4** provides the external bus signal timing parameters for both of these figures.

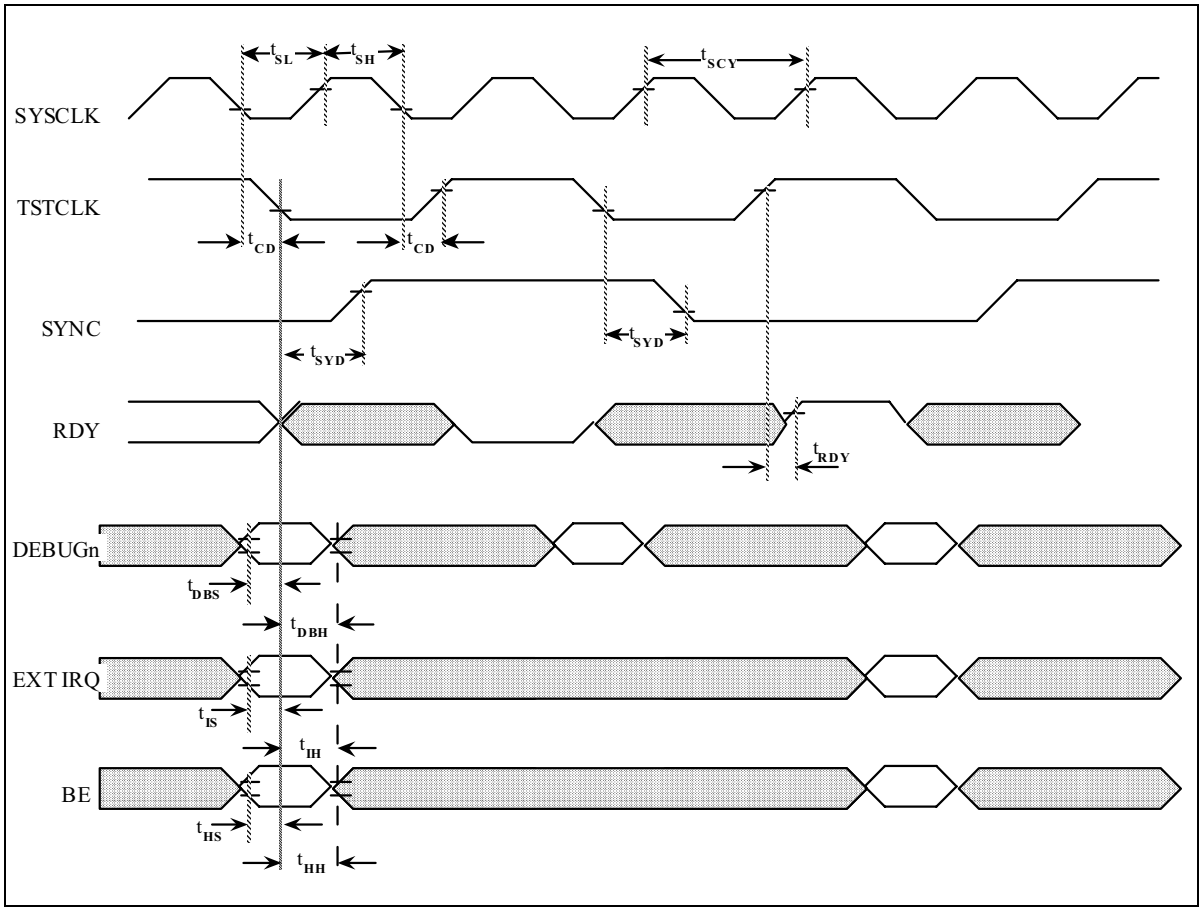


Figure 6-3 External bus clock and control timing

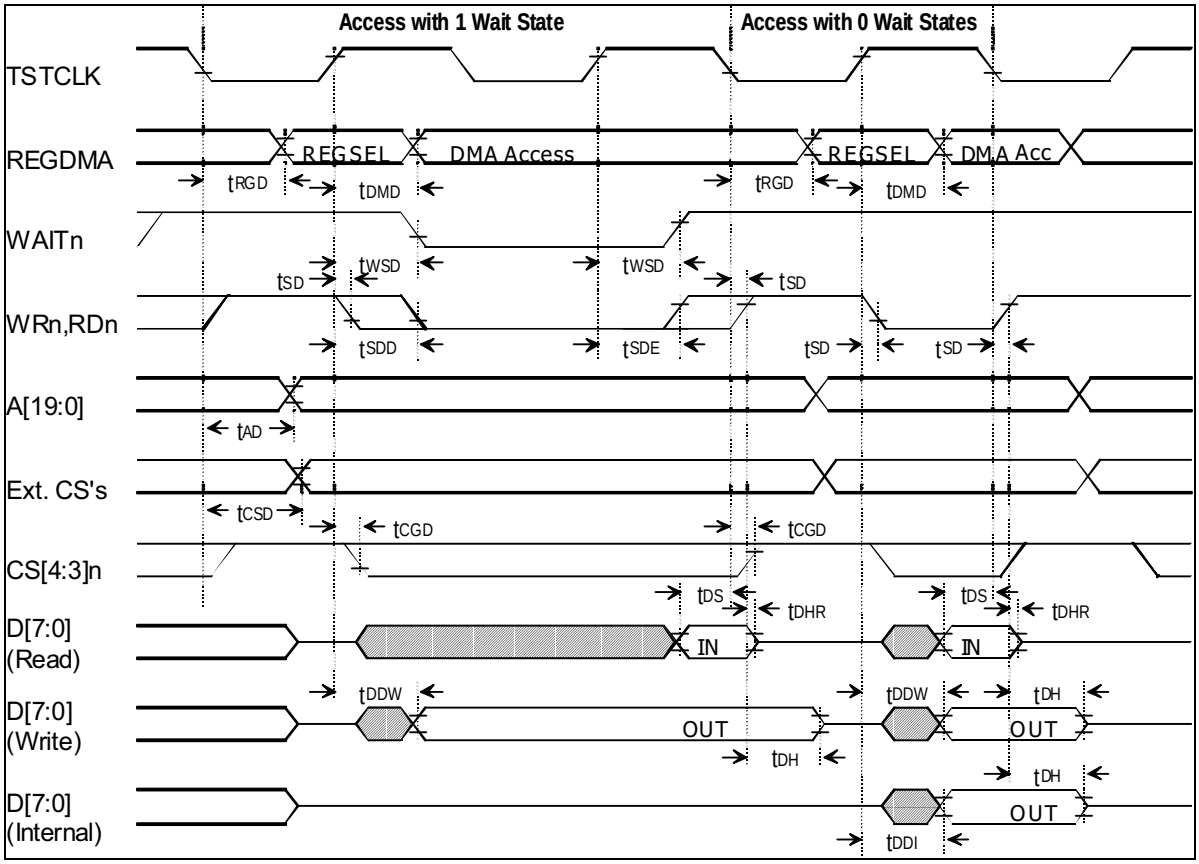


Figure 6-4 External bus data access timing

Table 6-4 External Bus Signal Timing Parameters

Parameter	Symbol	Min.	Max.	Units
SYSCLK cycle	tSCY	50	-	ns
SYSCLK pulse width high	tSH	22	-	ns
SYSCLK pulse width low	tSL	22	-	ns
TSTCLK delay	tCD	-	20	ns
SYNC delay	tSYD	-	30 tSL+10	ns
RDY access delay	tRDY	-	7	ns
/DEBUG setup	tDBS	20	-	ns
/DEBUG hold	tDBH	0	-	ns
Interrupts setup	tIS	15	-	ns
Interrupts hold	tIH	0	-	ns
BE setup	tHS	15	-	ns
BE hold	tHH	0	-	ns
REGDMA delay (CPU register access)	tRGD	-	30 tSL+10	ns

Parameter	Symbol	Min.	Max.	Units
REGDMA delay (DMA access)	tDMD	-	30 tSL+10	ns
WAITn delay	tWSD	-	30 tSL+12	ns
RDn,WRn delay	tSD	-	5	ns
RDn,WRn delay (Delay On=1)	tSDD	-	30 tSL+10	ns
RDn,WRn delay(Delay On=2,3)	tSDD	-	12	ns
WRn delay (Early Off)	tSDE	-	30 tSL+10	ns
Address delay	tAD	-	30 tSL+10	ns
Chip Select delay	tCSD	-	30 tSL+12	ns
Chip select (CSn[4:3]) delay	tCGD	-	10	
Data setup (Read)	tDS	12	-	ns
Data hold (Read)	tDHR	0	-	ns
Data delay (Write)	tDDW	-	20	ns
Data delay(Internal access)	tDDI	-	30	ns
Data hold (Write, Internal acces	tDH	tSL-10	-	ns

Notes :

1. Valid value is whichever is the greater of the 2 values listed.
2. Test Conditions: 5.0V +5%/-10%, 70℃, 50pF on all pins.

6.1.2.3. DRAM Controller

The DRAM chip provided is 1 Mega by 4 bits with maximum access time 100ns. Up to 1 column chip selects, **/CAS0**, are supported to access total 1 Mega bytes. For basic memory of 1Mega bytes, 2 DRAM chips are provided, while for extended memory, 2 more chips are provided.

Address bus of DRAM are physically connected to address bit **A0** to **A9** of FC200. Row addresses are gated onto the DRAM address bus first, followed by column addresses. The following operation modes are supported: bytes access mode, early write mode and normal read mode. One wait state is inserted in each DRAM bus cycle.

DRAM refresh is performed automatically, but only **/CAS** before **/RAS** operation is supported. Refresh cycle time per 1024 cycles is 125ms. During power on when it is time to refresh DRAM and they are not being accessed, the refresh cycle starts. When power down, no DRAM access occur, and DRAM can't backup the data.

6.1.2.4. CPU Interrupts

There are two ways to interrupt CPU, maskable interrupt (**/MIRQ**) and non-maskable interrupt NMI (**/DEBUG**,**/PWRDWN**). Modem interrupt **/MIRQ** must hold active until the CPU processes the request. The input **/PWRDWN** is OR'ed with the input **/DEBUG** and then synchronized before NMI input. An active NMI signal branches program execution to the address stored in NMI vector. When NMI represents power down, indicated by **/PWRDWN** low, the NMI control firmware performs the necessary maintenance operation and then enable lockout register to protect battery backed-up registers during power down.

6.1.2.5. RESET logic and Watchdog Timer

There are two power resets, battery power reset (**/BATRST**) and prime power reset (**/PWRDWN**). The battery power reset initializes battery backed-up logic when battery is first applied or changed. Prime power reset initializes all non-battery powered logic when system power is turned on. Another reset is generated by watchdog timer which guards against firmware lockup. **/RESET** pin provides a reset signal to external devices when power down or watchdog reset is active. If **/BATRST** become low, D2 ON, sothet U2C Op output low and reset modem.

6.1.2.6. Real Time Clock

The Real Time Clock (RTC) circuit is required to maintain current time information under primary power and battery backup conditions. RTC tracks seconds, minutes, hours, days, months and years elapsed since the reference year, 1999. The tracking range of RTC is up to 32 years, and automatic compensation is made for leap years.

6.1.3 Scanner Controller

Only one type of scanner can be applied, Hualing. Power of scanner LED is on/off controlled by transistor switch Q1 and Q2. **CLK2** is 500KHz clock to scanner and **START** is periodic pulse for every 10ms. The scanner outputs video signal synchronized to clock. A flash A/D converter in FC200 samples the video signal. FC200 performs shading correction to correct scanner data for non-uniformity of 1728 image sensors. State of art image processing on both text and halftone images are provided. Edge enhancement improves image quality on halftone, and dynamic contrast control improves text image. An internal dither table programmable up to 8X8 byte matrix is provided to perform halftone process.

The video signal is amplified by adaptive gain in order to let white video level close to reference level of flash A/D converter.

6.1.4 Motor Drivers

Signal **SM[0..3]** are selected as scanner control lines. The stepping pattern signals determined by firmware outputs to scanner motor via current drivers, transistor array.

6.1.5 Switch and Sensors

Cover on/off switch is debounced by a RC couple. Paper sensor output is shunt by a noise-filtering capacitor.

6.1.6 Battery and Power Down Reset

Prime power failure is detected by a voltage comparator that compares +5V supply with a constant reference voltage 4.5V provided by transistor voltage source.

Battery BT1 backs up VXFC, and SRAM in the beginning of power down.

6.1.7 Fax Modem Circuit

The Rockwell R96DFXL MONOFAX modem is a synchronous 9600 bits per second (bps) half-duplex modem with error detection and DTMF reception. The modem can operate over the public switched telephone network (PSTN) through line terminations provided by a data access arrangement (DAA). The R96DFXL is designed for use in Group 3 facsimile machines. The modem satisfies the requirement specified in CCITT recommendations V.29, V.27 ter, V.21 Channel in 2, and T.4, and meets the binary signaling requirements of T.30. The pin assignments for 100-pin PQFP are listed in table 6-5, and its digital interface characteristics is listed in table 6-6, analog interface is listed in table 6-7.

Table 6-5 Modem R96DFXL Pin Functions

Pin No.	Pin Name	Signal Name	I/O	Description	Input Type	Output Type
1	GP03	Rrelay 1	O	General purpose input/output	IB	OB
2	GP04	Rrelay 2	O	General purpose input/output	IB	OB
3	GP05	Rrelay 3	O	General purpose input/output	IB	OB

Pin No.	Pin Name	Signal Name	I/O	Description	Input Type	Output Type
4	GP06	RING_OFI	O	General purpose input/output	IB	OB
5	GP07	BREAK	O	General purpose input/output	IB	OB
6	OVD2	GND	GND	Connect to digital ground		
7	OVD2	GND	GND	Connect to digital ground		
8	D7	D7	I/O	Data bus line 7	IA	OB
9	D6	D6	I/O	Data bus line 6	IA	OB
10	D5	D5	I/O	Data bus line 5	IA	OB
11	D4	D4	I/O	Data bus line 4	IA	OB
12	D3	D3	I/O	Data bus line 3	IA	OB
13	D2	D2	I/O	Data bus line 2	IA	OB
14	D1	D1	I/O	Data bus line 1	IA	OB
15	D0	D0	I/O	Data bus line 0	IA	OB
16	OVD2	GND	GND	Connect to digital ground		
17	OVA	AGND	GND	Connect to analog ov ground		
18	RAMPIN		R	Receiver amplifier input		
19	NC			No connection		
20	NC			No connection		
21	OVA	AGND	GND	Connect to analogy OV ground		
22	+5VD2	VDD	PWR	Connect to digital +5V power		
23	OVD1	GND	GND	Connect to digital ground		
24	SWGAINI		R	Connect to SWGAINO		
25	ECLKIN1		R	Connect to SWGAINI		
26	SYNCIN1		R	Connect to EYESYNC		
27	NC			No connection		
28	NC			No connection		
29	NC			No connection		
30	OVA	AGND	GND	Connect to analogy OV ground		
31	NC			No connection		
32	NC			No connection		
33	NC			No connection		
34	DAIN		R	Connect to daout		
35	ADOUT		R	ADC output		
36	BYPASS	GP13	I	Receiver highpass filter bypass enable	IC	
37	RCVI		R	Connect to RCVO		
38	TXLOSS3		I	8dB of analog transmit level attenuation	IC	
39	TXLOSS2		I	4dB of analog transmit level attenuation	IC	
40	TXLOSS1		I	2dB of analog transmit level attenuation	IC	
41	NC			No connection		
42	NC			No connection		
43	OVA	AGND	GND	Connect to analog OV ground		
44	TXOUT		AA	Connect to smoothing filter input		
45	RXIN		AB	Connect to anti-aliasinf filter output		
46	+5VA	+5VA	PWR	Connect to analog +5V power		
47	OVA	GND	GND	Connect to analog OV ground		

Pin No.	Pin Name	Signal Name	I/O	Description	Input Type	Output Type
48	AGD		R	+2.5 analog ground		
49	AOUT		R	Smoothing filter output		
50	OVD1	GND	GND	Connect to digital ground		
51	NC			No connection		
52	/IRQ1	/MIRQ	O	Interrupt request	OC	
53	/WRITE	/WR	I	Write enable	IA	
54	/CS	/MCS	I	Chip select	IA	
55	/READ	/RD	I	Read enable	IA	
56	RS4	A4	I	Register select 4	IA	
57	RS3	A3	I	Register select 3	IA	
58	RS2	A2	I	Register select 2	IA	
59	RS1	A1	I	Register select 1	IA	
60	RS0	A0	I	Register select 0	IA	
61	GP13	BYPASS	I/O	General purpose I/O	IA	OB
62	+5VD1	VDD	PWR	Connect to digital +5V power		
63	GP11	MUTE	O	General purpose input/output	IA	OB
64	/RTS		I	Request to send	IA	
65	/EN85		I	Enable 8085 bus	IA	
66	OVD2	GND	GND	Connect to digital ground		
67	/PORI	/MRST	I	Power-on-reset input	ID	
68	XTLI		R	Connect to Crystal/Oscillator		
69	XTLO		R	Connect to Crystal/Oscillator		
70	XCLK	SYSCLK	O	19MHz output		OD
71	YCLK		O	9.5MHz output		OD
72	+5VD1	VDD	PWR	Connect to digital +5V power		
73	DCLKI	DCLK	R	Connect to DCLK		
74	SYNCIN2	SYNCIN1	R	Connect to EYESYNC		
75	GP16		I/O	General purpose input	IA	OB
76	GP17		I/O	General purpose input	IA	OB
77	OVD2	GND	GND	Connect to digital ground		
78	/CTS		O	Clear to send	OA	
79	TXD		I	Transmit data	IA	
80	OVD2	GND	GND	Connect to digital ground		
81	OVD2	GND	GND	Connect to digital ground		
82	DCLK	/IRQ2	O	Transmit and receive data clock		OA
83	EYESYNC		O	Serial eye pattern strobe (9600Hz)		OA
84	EYECLKX		O	Serial eye pattern clock		OA
85	EYECLK		O	Serial eye pattern clock		OA
86	EYEX		O	Serial eye pattern X output		OA
87	ADIN		R	Connect to ADOUT		
88	DAOUT		R	DAC/AGC output		
89	OVD2	GND	GND	Connect to digital ground		
90	EYEY		O	Serial eye pattern Y output		OA
91	GP21		I/O	General purpose input	IA	OB

Pin No.	Pin Name	Signal Name	I/O	Description	Input Type	Output Type
92	OVD2	GND	GND	Connect to digital ground		
93	GP20		I/O	General purpose input	IA	OB
94	GP19		I/O	General purpose input	IA	OB
95	RXD		O	Received data		OA
96	/RLSD		O	Received line signal detected		OA
97	OVD2	GND	GND	Connect to digital ground		
98	RCV0		R	Mode select output		
99	SWGAINO		R	Connect to SWGAINI		
100	GP02	RELAY	O	General purpose input/output	IA	OB

Notes:

I/O types:

IA, IB, IC, ID= Digital input.

OA, OB, OC, OD= Digital output.

I(DA)= Analog input.

O(DD), O(DF)= Analog output.

R Types

Required overhead connection; no connection to host equipment

Figure 6-5 Digital Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Input High Voltage	VIH				V	
Types IA and IB		2.0	-	Vcc		
Types IC and ID		0.8*Vcc	-	Vcc		
Input High Current	IIH				μA	Vcc=5.25V, Vin=5.25V
Type IB		-	-	40		
Type IC		-	-	2.5		
Input Low Voltage	VIL				V	Vdc
Type IA, IB, ID		-0.3	-	0.8		
Type IC		-0.3	-	0.2*Vcc		
Input Low Current	IIL				μA	Vcc= 5.25V
Types IB and IC		-	-	-400		
Input Leakage Current	IIN				μA	VIN= 0 to +5V
Type IB		-	-	± 2.5		Vcc= 5.25V
Output High Voltage	VOH				V	
Type OA and OB		3.5	-	-		ILOAD= -100 μA
Type OE		2.4	-	-		ILOAD= -40 μA

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Output High Current	IOH	-	-	-0.1	m A	
Types OD						
Output Low Voltage	VOL				Vdc	
Types OA and OC		-	-	0.4		ILOAD= 1.6 mA
Types OB		-	-	0.4		ILOAD= 0.8 mA
Types OE		-	-	0.4		ILOAD= 0.4 mA
Output Low Current	IOL	-	-	100	μ A	
Types OD						
Output Leakage Current	ILO				μ A	VIN= 0.4 to Vcc-1
Type OA and OB		-	-	$\pm$ 10		
Capacitor Load	CL				pF	
Type IA and ID		-	5	-		
Type IB		-	20	-		
Capacitor Drive	CD				pF	
Type OA, OB, OC		-	100	-		
Types OD		-	50			
Circuit Type						
Type IA						TTL
Type IB						TTL with pull-up
Type IC						CMOS with pull-up
Type ID						POR
Type OA and OB						TTL with 3-state
Type OC and OE						Open drain
Type OD						Clock

The modem (R96DFXL) must be connected to an external crystal circuit consisting of a 24.00014MHz crystal and two capacitors. The analog power and ground are decoupled from +5V and digital ground by bead cores. Power-on reset **/PORI** is provided by FC200. Output of received analog signal is available on pin **VOICE** and is multiplexed with signal **TONE** before input to audio amplifier U18B. TXA, RXA, U18B, U18C, U18D is used to adjust the volume of voice. RXA have to be amplified and modified voltage level according to this signal is different from modem characteristics.

6.1.8 Memory

There are 2 chips of 4 Mega bits DRAM mounted on board. SRAM of 32K bytes stores user and system data. DRAM was not backed up , SRAM is backed up by BT1. EPROM of 128K bits is installed on socket for various firmware versions are provided.

6.1.9 Network Interface

There are 6 relay drivers implemented by transistors. While power-on reset, control all relays are at normal state.

6.1.10 Panel Interface

Operation panel output bus **OPO[0..7]**, input bus **OPI[0..3]** and control output **LEDCTL**, **LCDCS** supports 32-keys keyboard and 3 LEDs. **LEDCTL** disables LEDs during keyboard strobing in order to prevent the dim LED glow. Also **OPO[0..3]** and **LCDCS** drive LCD module.

6.2 Main Board Circuit Description (TF-300PT)

The Main Board version is the first version that begins mass-production and the circuit diagrams consists of 13 schematics which are described in the following sections.

6.2.1 Block Diagram

The extended FAXENGINE chip set consists of a Integrated Fax Controller (FC200-M) and a modem chip (RFX96V24 or RFX144V24). The FC200-M performs all common facsimile machine control, monitor and interface functions. Additionally, it contains scanner, printer, keyboard, stepper motor and modem interfaces. These programmable functions and interfaces support a wide range of peripherals. Integrated 8-bit pipeline ADC, clamp, sample hold and AGC allow minimum external scanner interface hardware. Built-in DLC and shading correction combined with two-dimensional Error Diffusion and two dimensional edge enhancements provides state-of-the-art image processing performance in half-tone modes. The RFX96V24 (RFX144V24) can excute 9600(14400) bps fax transmission and reception. The modem chip includes an advanced voice algorithm, which performs built-in digital answering machine.

6.2.2 Integrated Fax Controller

The Advanced extended FAXENGINE Integrated Fax Controller (FC200-M) includes following features.

1) Microprocessor.

The embedded processor MC24TM in FC200-M provides 16-Mbyte memory addressing capability over 24-bit address/8-bit data bus and dedicated control lines.

2) Printer Interface Control.

The FC200 supplies programmable strobe and control signals that interface with most, if not all, thermal printers. In addition to Standard (non-Split) printing mode, latchless Split-printing mode and latchless two-clock mode can be supported. The three signals PDAT, PCLK, and PLAT control the transfer of data to the printer.

3) Scanner Control.

Four programmable control and timing signals supports CIS scanner interface. An internal 8-bit A/D converter is provided. Video processing supports DLC and two modes of shading correction for scanner data non-uniformity's arising from uneven sensor output or uneven illumination. Correction may be provided to an 8-pixel group at a time or, separately to each pixel. Less than 1 K of RAM is required to support shading correction. A Digital Adaptive Halftone image processing is supported. A 2-Dimensional error diffusion algorithm as well as a 2-D Edge Enhancement control are performed in the hardware. Dynamic background and contrast control is provided for text images. Multi-level horizontal B4 to A4 reduction is also provided for the scanner data.

4) Motor Control.

Eight outputs are provided to external current drivers; four for scanner motor.

5) Image Coding Schemes.

FC200-M provides MMR data compression and decompression conformed with ITU-T recommendation T.4.

6) Real Time Clock (RTC).

FC200 includes a battery backed-up real time clock. The life of the RTC is 32 years, and leap year compensation is automatic.

7) External Memory Support.

External ROM stores the program object code. External RAM is used by processor for shading correction and line buffer. DRAM controller supports refresh during battery operation. DRAM stores image and voice data.

8) Modem Interface.

FC200-M runs at a clock derived from modem clock. FC200-M immediately handles interrupt request from modem in order to keep constant transmission flow.

9) Panel Interface.

Four inputs, eight strobe outputs, and two control outputs support keys scan and LCD driver.

10) Battery and Power.

FC200-M detects power failure and switches to battery backed-up mode.

Table 6-6 FC200 Pin Assignments

Pin Name	Pin No.	I/O	Input Type	Output Type	Pin Description (Note: Active low signals have an "n" pin name ending.)
CPU Control Interface					
MIRQn	135	I	HU	--	Modem interrupt, active low. (Hysteresis In, Internal Pullup.)
SYSCLK	133	I	H	--	System clock. (Hysteresis In.)
TSTCLK	130	O	--	123XT	Test clock.
Bus Control Interface					
A[23:0]	[1:6][8:13] [15:20][22:27]	O	TU	123XT	Address bus (24-bit)
D[7:0]	[136:139] [141:144]	I/O	TU	123XT	Data bus (8-bit)
RDn	128	O	--	123XT	Read strobe.
WRn	127	O	--	123XT	Write strobe.
ROMCSn	120	O	--	123XT	ROM chip select.
CS1n	122	O	--	123XT	I/O chip select.
CS0n	57	O	--	123XT	SRAM chip select. (Battery powered.)
MCSn	121	O	--	123XT	Modem chip select.
SYNC	126	O	--	123XT	Indicates CPU op code fetch cycle (active high).
REGDMA	124	O	--	123XT	Indicates REGSEL cycle and DMA cycle.
WATTn	125	O	--	123XT	Indicates current TSTCLK cycle is a wait state or a halt state.
RASn	113	O	--	123XT	DRAM row address select. (Battery powered).
CAS[1:0]N	[111:112]	O	--	123XT	DRAM column address select. (Battery powered.)
DWRn	109	O	--	123XT	DRAM writ. (Battery powered.)
Prime Power Reset Logic and Test					
DEBUGn	129	I	HU	--	Ecternal non-maskable input (NMI).
RESETn	131	I/O	HU	2XO	FC200(-M) Rest.
TEST	58	I	C	--	Sets Test mode (battery powered).
Battery Power Control and Reset Logic					
XIN	59	I	OSC	--	Crystal oscillator input pin.
XOUT	60	O	--	OSC	Crystal oscillator output pin.
PWRDWNn	62	I	H	--	Used by external system to indicate--to FC200(-M)--loss of prime power. (Results in NMI).
BATRSTn	61	I	H	--	Battery power reset input.

Pin Name	Pin No.	I/O	Input Type	Output Type	Pin Description (Note: Active low signals have an “n” pin name ending.)
WRPROTn	110	O	--	1XC	(Battery powered.) Write protect during loss of VDD power. NOTE:The functional logic is powered by battery power, but the outputdrive is powered by DRAM battery power.
Scanner Interface					
START	101	O	--	2XS	Scanner shift gate control.
CLK1	100	O	--	2XS	Scanner clock.
CLK1n	99	O	--	2XS	Scanner clock-inverted.
CLK2	98	O	--	2XS	Scanner reset gate control (or clock for CIS scanner).
FCS1n /VIDCTL0	96	O	--	2XT	Flash memory chip select or video control signal.
FCS2n /VIDCTL1	97	O	--	2XT	Flash memory chip select or video control signal.
Printer Interface					
PCLK/DMAACK	29	O	--	3XC	Thermal Print Head (TPH) clock or external DMAACK.
PDAT	30	O	--	2XP	Serial printing data (to TPH).
PLAT	31	O	--	3XP	TPH data latch.
STRB[3:0]	[33:36]	O	--	1XP	Strobe signals for the TPH.
STRBPOL/ DMARQ	37	I	C	--	Sets strobe polarity, active high/low , or external DMA request.
Operator Panel Interface					
OPO[5]/GPO[13]	40	O	--	2XL	Keyboard/LED strobe [5] or GPO[13]
OPO[6]/GPO[14]	39	O	--	2XL	Keyboard/LED strobe [6] or GPO[14]
OPO[7]/GPO[15]	38	O	--	2XL	Keyboard/LED strobe [7] or GPO[15]
OPI[0]/GPIO[21]/SSRXD1	52	I/O	HU	2SC	(Pullup, Hysteresis In.) Keyboard retrun [0] ro GPIO[21] or SSRXD1 (for SSIF1)
OPI[1]/GPIO[22]/SSSTAT1	51	I/O	HU	2SC	(Pullup, Hysteresis In.) Keyboard retrun [1] ro GPIO[22] or SSSTAT1 (for SSIF1)
OPI[2]/GPIO[23]/SSCLK1	50	I/O	HU	2SC	(Pullup, Hysteresis In.) Keyboard retrun [2] ro GPIO[23] or SSCLK1 (for SSIF1)
OPI[3]/GPIO[24]	49	I/O	HU	2SC	(Pullup, Hysteresis In.) Keyboard retrun [0] ro GPIO[21]
LEDCTL	55	O	--	4XC	Indicates outputs OPO[7:0] are for LEDs.
LCDCS	54	O	--	1XC	LCD chip select.
General Purpose I/O					
GPIO[0]	94	I/O	H	2XC	(Hysteresis In) GPIO[0].
GPIO[1] /SASTXD	93	I/O	H	2XC	(Hysteresis In) GPIO[1] or SASTXD (for SASIF).
GPIO[2] /SASRXD	92	I/O	H	2XC	(Hysteresis In) GPIO[2] or SASRXD
GPIO[3] /SASCLK	91	I/O	H	2XC	(Hysteresis In) GPIO[3] or SASCLK
GPIO[4] /CPCIN	90	I/O	H	2XC	(Hysteresis In) GPIO[4] or Calling Party Control Input
GPIO[5 /SSCLK2	89	I/O	H	2XC	(Hysteresis In) GPIO[5] or SSCLK2

Pin Name	Pin No.	I/O	Input Type	Output Type	Pin Description (Note: Active low signals have an “n” pin name ending.)
GPIO[6] /SSTXD2	87	I/O	H	2XC	(Hysteresis In) GPIO[6] or SSTXD2 (for SSIF2).
GPIO[7] /SSRXD2	86	I/O	H	2XC	(Hysteresis In) GPIO[7] or SSRXD2 (for SSIF2)
GPIO[8] /FWRn	85	I/O	H	2XC	(Hysteresis In) GPIO[8] or flash write enable signal for NAND-type flash memory.
GPIO[9] /FRDn	84	I/O	H	2XC	(Hysteresis In) GPIO[9] or flash read enable signal for NAND-type flash memory.
GPIO[10]/ SSSTAT2	83	I/O	H	2XC	(Hysteresis In) GPIO[10] or SSSTAT2
GPIO[11]/BE /SERINP	82	I/O	H	1XC	(Hysteresis In) GPIO[11] or bus enable or serial port data input for autobaud detection.
GPIO[12] /CS[2]n	80	I/O	H	2XC	(Hysteresis In) GPIO[12] or I/O chip select [2].
GPIO[13] /CS[3]n	79	I/O	H	2XC	(Hysteresis In) GPIO[13]or I/O chip select [3].
GPIO[14] /CS[4]n	78	I/O	H	2XC	(Hysteresis In) GPIO[14] or I/O chip select [4].
GPIO[15] /CS[5]n	77	I/O	H	2XC	(Hysteresis In) GPIO[15] or I/O chip select [5].
GPIO[16] /IRQ[8]	76	I/O	H	1XC	(Hysteresis In) GPIO[16] or external interrupt 8.
GPIO[17]	75	I/O	H	1XC	(Hysteresis In) GPIO[17]
GPIO[18] /IRQ[9]n	74	I/O	H	1XC	(Hysteresis In) GPIO[18] or external interrupt 9.
GPIO[19]/RDY/SEROUT	73	I/O	H	1XC	(Hysteresis In) GPIO[19] or ready signal or Serial port data output for autobaud detection.
GPIO[20]/ ALTTONE	107	I/O	H	1XC	(Hysteresis In) GPIO[20] or ALTTONE.
Miscellaneous					
SM[3:0]/ GPO[7:4]	[103:106]	O	--	1XC	Programmable: scan motor control pins or GPO pins.
PM[3:0]/ GPO[3:0]	[115:118]	O	--	1XC	Programmable: print motor control pins or GPO pins.
TONE	119	O	--	1XC	Tone output signal.
Power. Reference Voltages. Ground					
-Verf/CLREF	66	I	-VR	--	Negative Reference Voltage for Video A/D.
ADXG	68	I	VXG	--	A/D Internal GND.
ADGA	69		VADG		A/D Analog Ground.
ADVA	70		VADV		A/D Analog Power.
ADGD	72		VADG		A/D Digital Ground.
+Vref	71		+VR		Positive Reference Voltage for Video A/D.
VIN	67	I	VA	--	Analog Video A/D input.
THADI	65	I	TA	--	Analog Thermal A/D input.

Pin Name	Pin No.	I/O	Input Type	Output Type	Pin Description (Note: Active low signals have an “n” pin name ending.)
VSS(12)	7,21,28,45,53,56,64,88,95,108,132,134				Digital Ground.
VDD(8)	14,32,41,48,81,102,123,140				Digital Power.
VBAT	63				Battery power for DRAM refresh.
VDRAM	114				DRAM Battery Power

Table 6-7 FC200 Signal Characteristics

Input Signal Characteristics					
Input Type	**Description**	**VIL (V max.)**	**VIH (V min.)**	**Hysteresis (V min.)**	**Pullup Resistance(K ohm)**
C	CMOS input	0.3*VDD	0.7*VDD	-	-
H	Hysteresis	0.3*VDD	0.6*VDD	1.0	-
HU	Hysteresis/Pull up	0.3*VDD	0.6*VDD	1.0	35-150
T	TTL input	0.8	2.0	-	-
TU	TTL/Pull up	0.8	2.0	-	35-150
OSC	CMOS input	0.3*VDD	0.7*VDD	-	-

Absolute Input Range = -0.5 to VDD+0.5					
Input Type	**Description**	**Operating (V min.)**	**(V max.)**	**Absolute (V min.)**	**(V max.)**
TA	Thermal A/D input	0.2*VDD	0.8*VDD	-0.5	VDD+0.5
VA	Video A/D input	-VR	+VR	-0.5	VADV+0.5
+VR	Video A/D +Vref	0.8	3.3	-0.5	VADV+0.5
-VR	Video A/D -Vref	-0.2	2.0	-0.5	VADV+0.5
VXG	Video Internal ground	--	--	--	--
VADV	Video A/D power	VDD-0.1	VDD+0.1	-0.5	7.0
VADG	Video A/D ground	-0.1	0.1	-0.5	0.5
VDD	Digital power	4.5	5.25	-0.5	7.0
GND	Digital ground	0	0	0	0
VDRAM	Battery power for DRAM	2.25	5.25	-0.5	7.0
VBAT	Battery power for RTC/SRAM	2.25	5.25	-0.5	7.0

Output Signal Characteristics						
Output Type	**Description**	**VOL (V max)**	**IOL (mA min)**	**VOH (V min)**	**IOH (mA min)**	**CL (pF max)**

1XC	CMOS output (1X)	0.4	1.6	VDD-1.5	1.6	50
1XP,2XP	High capacitance driver	0.4	1.6	VDD-1.5	1.6	200
2XC	CMOS output (2X)	0.4	3.5	VDD-1.5	3.5	50
2XT	TTL output (2X)	0.4	4	2.4	4	50
2XS	CMOS output (2X)	0.4	3.5	VDD-1.5 1.5	3.5 15	50 50
2XL	LED driver	0.7	10	VDD-1.5	3.5	100
2XO	CMOS output, Open drain	0.4	3.5	N/A	N/A	50
3XC	CMOS output (3X)	0.4	6	VDD-1.5	6	50
3XP	High capacitance driver (3X)	0.4	6	VDD-1.5	6	700
4XC	CMOS Output (4X)	0.4	12	VDD-1.0	12	50
123XTT	1/2/3X (Tristate) output	0.4	1.6/4/6	2.4	1.6/4/6	50

Table 6-8 FC200 Memory Map

Chip select	Address (Hex)	External to FC200	Internal to FC200
CS0	000000-007FFF	SRAM	
	00E000-00FBFF		RAM
CS1	00FC00-00FCFF	I/O (N/C)	
CS2-CS4	00FD00-00FDFF	I/O (N/C)	
	00FE00-00FEFF		RESISTERS
MCS	00FF00-00FFFF	Modem	
FCS1	300000-3FFFFF	FLASH MEMORY	
FCS2	200000-2FFFFF	FLASH MEMORY	
CAS0- CAS1	400000-BFFFFF	DRAM or ARAM	
CS5	D00000-DFFFFF	I/O (N/C)	
ROMCS	FE0000-FFFFFF	ROM	

6.2.2.1. Bus Cycle Timing

The processor and external bus cycle timing is defined by **bclk** (an internal signal). **bclk** is referenced to **TSTCLK** which is derived by dividing **SYSCLK** by either 2 or 3,as shown in Figure 6-6 and Figure 6-7 respectively. **bclk** can be extended low (halted state) or stretched high (wait state) by external and internal conditions that are described later. Both halt and wait state are indicated on the external pin WAITn.

A standard bus cycle begins at the falling edge of **TSTCLK** and ends at the falling edge of the next **TSTCLK.** Some memory and peripheral devices require extended bus cycle, which is accomplished by adding wait states. During wait states, the WAITn signal is activated. Wait states can be created with programmable control provided for external chip selects (ROMCSn, MCSn, CS[5:0]n), by the DRAM controller (CAS[1:0]n),and with the external RDY input pin. The wait states created by the RDY input are added to the wait states generated by the chip select control logic.

The bus cycle can be halted by BE pin or by an access conflict (i.e., a CPU or DMA access to DRAM coincident with a DRAM refresh, or a CPU access to the RAM when a DMA access of the same RAM is in progress). When the bus cycle is stopped, Halt states are added in increments of 1 **TSTCLK**. When the Halt condition is released, the bus cycle resumes at the next **TSTCLK** rising edge.figure 8.1.1-2 xhows an example of a bus cyle with 1Halt state.

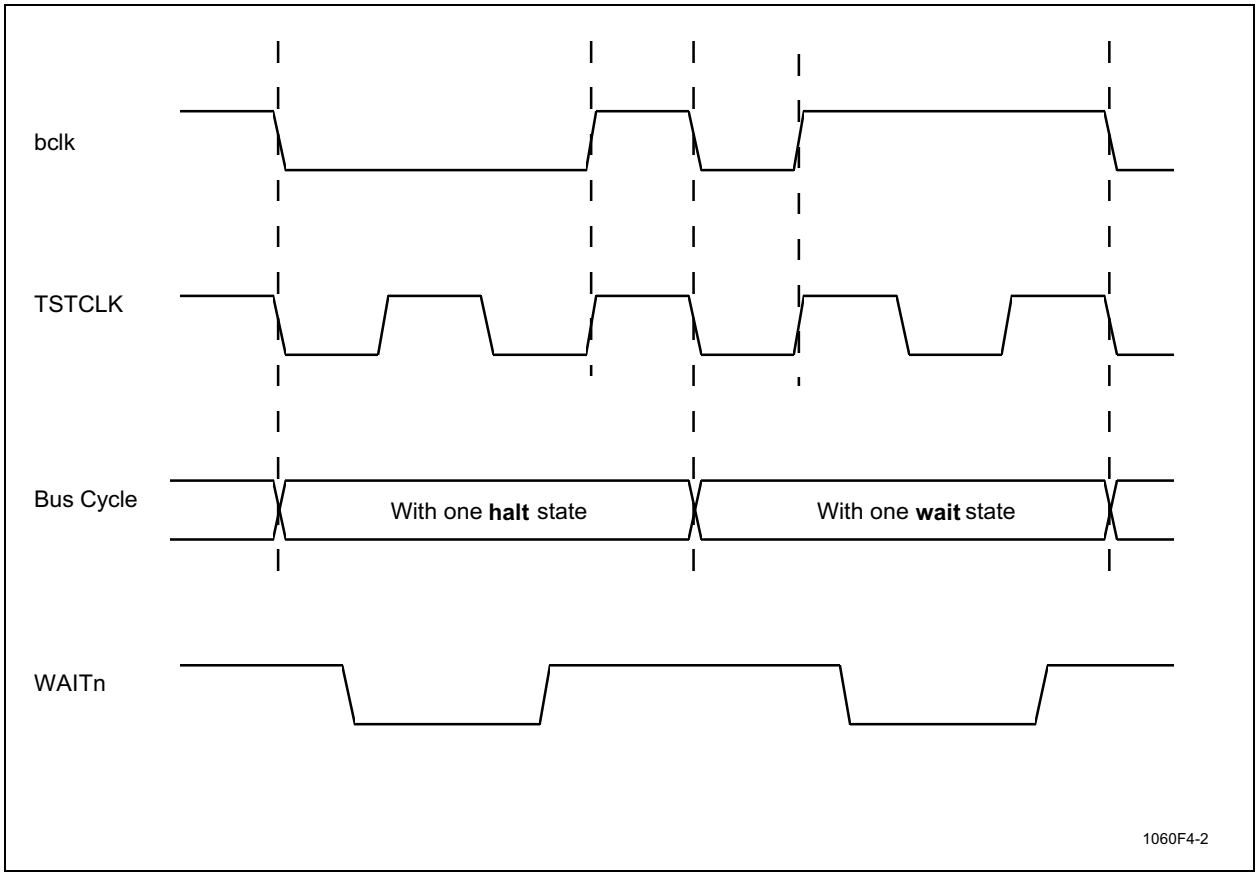


Figure 6-6 Bus Cycle (Divide by 2)

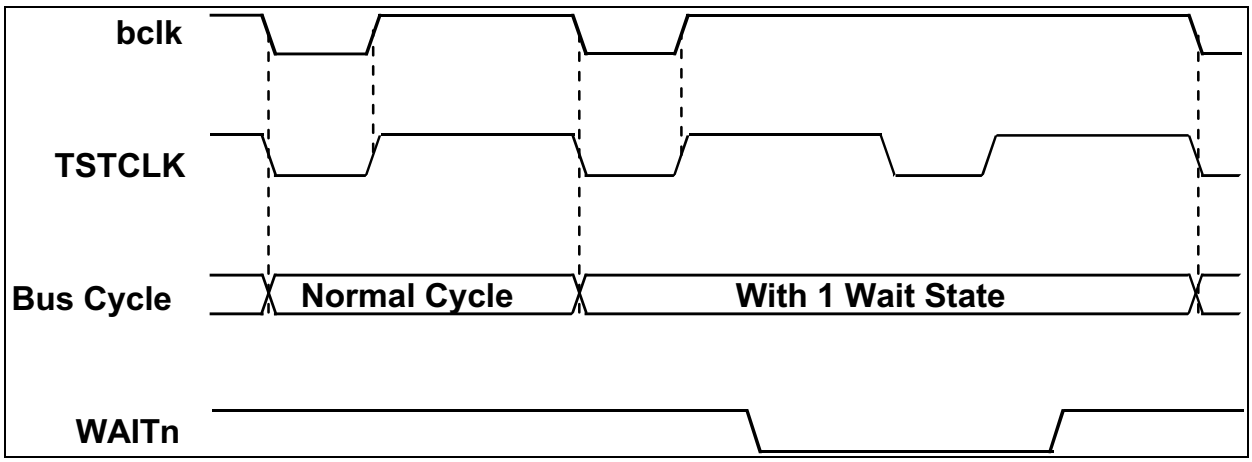


Figure 6-7 Bus Cycle (Divide by 3)

6.2.2.2. External Bus Signal Timing

External bus clock and control timing is provided in **Figure 6-8** External bus data access timing is provided in **Figure 6-9**, and **Table 6-9** provides the external bus signal timing parameters for both of these figures.

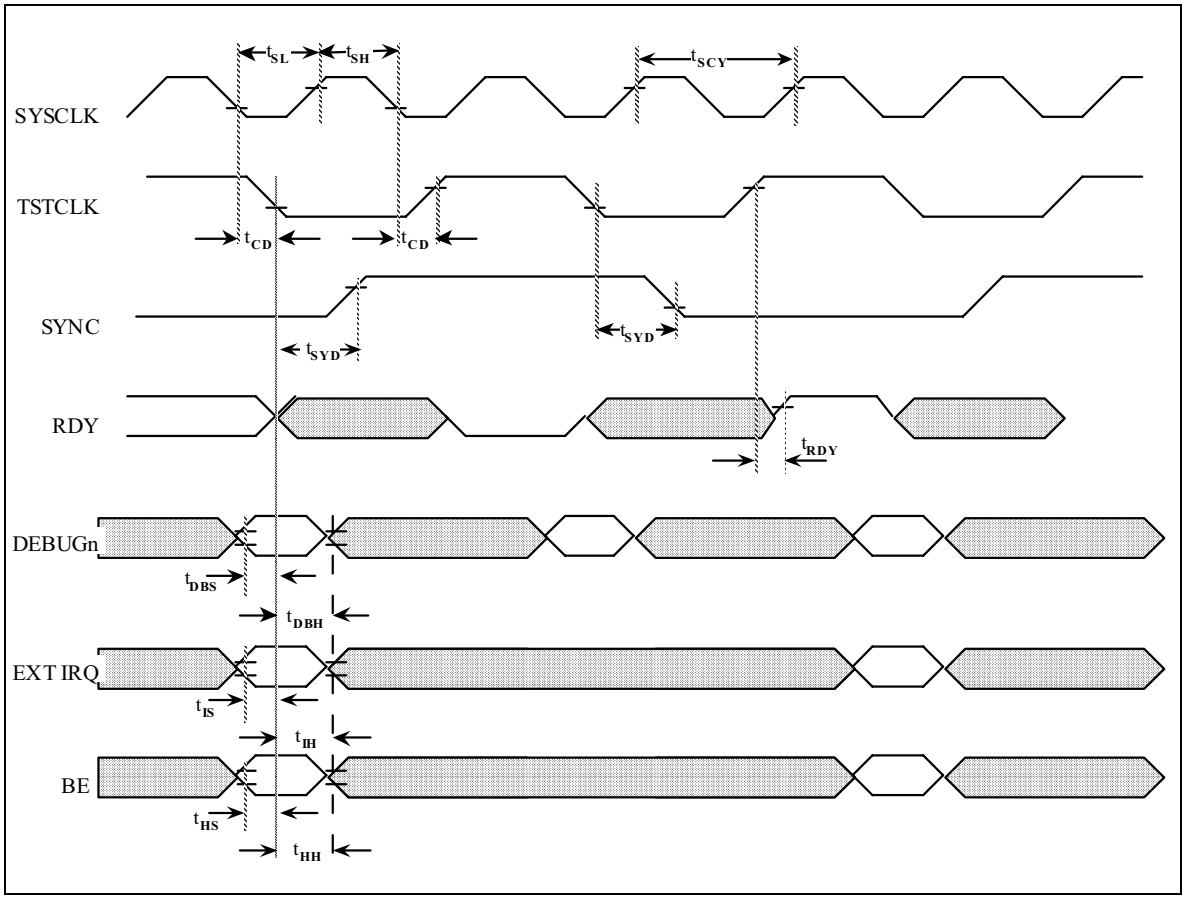


Figure 6-9 External bus clock and control timing

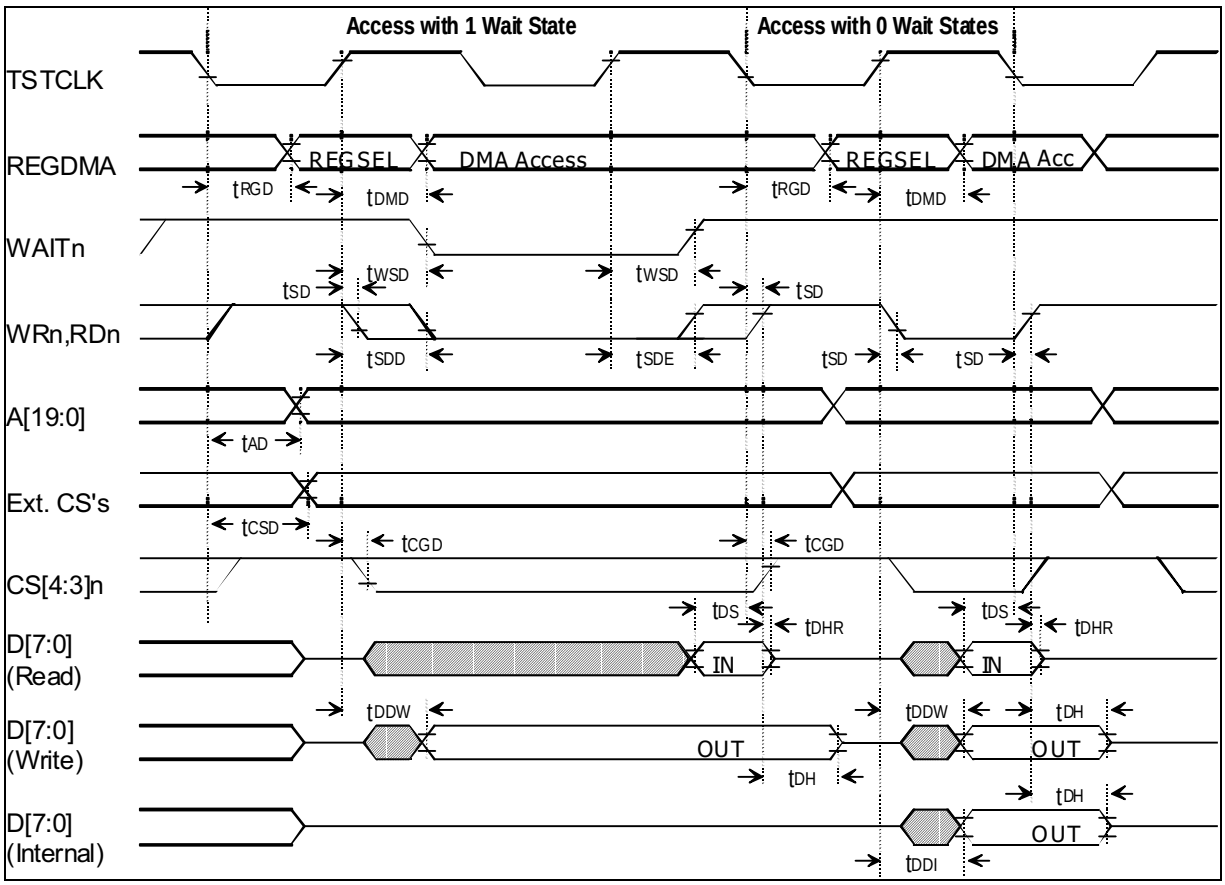


Figure 6-10 External bus data access timing

Table 6-9 External Bus Signal Timing Parameters

Parameter	Symbol	Min.	Max.	Units
SYSCLK cycle	tSCY	50	-	ns
SYSCLK pulse width high	tSH	22	-	ns
SYSCLK pulse width low	tSL	22	-	ns
TSTCLK delay	tCD	-	20	ns
SYNC delay	tSYD	-	30 tSL+10	ns
RDY access delay	tRDY	-	7	ns
/DEBUG setup	tDBS	20	-	ns
/DEBUG hold	tDBH	0	-	ns
Interrupts setup	tIS	15	-	ns
Interrupts hold	tIH	0	-	ns
BE setup	tHS	15	-	ns
BE hold	tHH	0	-	ns
REGDMA delay (CPU register access)	tRGD	-	30 tSL+10	ns

Parameter	Symbol	Min.	Max.	Units
REGDMA delay (DMA access)	tDMD	-	30 tSL+10	ns
WAITn delay	tWSD	-	30 tSL+12	ns
RDn,WRn delay	tSD	-	5	ns
RDn,WRn delay (Delay On=1)	tSDD	-	30 tSL+10	ns
RDn,WRn delay(Delay On=2,3)	tSDD	-	12	ns
WRn delay (Early Off)	tSDE	-	30 tSL+10	ns
Address delay	tAD	-	30 tSL+10	ns
Chip Select delay	tCSD	-	30 tSL+12	ns
Chip select (CSn[4:3]) delay	tCGD	-	10	
Data setup (Read)	tDS	12	-	ns
Data hold (Read)	tDHR	0	-	ns
Data delay (Write)	tDDW	-	20	ns
Data delay(Internal access)	tDDI	-	30	ns
Data hold (Write, Internal acces	tDH	tSL-10	-	ns

Notes :

1. Valid value is whichever is the greater of the 2 values listed.
2. Test Conditions: 5.0V +5%/-10%, 70℃, 50pF on all pins.

6.2.2.3. DRAM Controller

The DRAM chip provided is 1 Mega by 16 bits with maximum access time 100ns. Up to 2 column chip selects, /CAS0 and /CAS1, are supported to access total 1 Mega bytes. For basic memory of 1Mega bytes, 1 DRAM chips are provided, while for extended memory, 1 more chips are provided.

Address bus of DRAM are physically connected to address bit A0 to A9 of FC200-M. Row addresses are gated onto the DRAM address bus first, followed by column addresses. The following operation modes are supported: bytes access mode, early write mode and normal read mode. One wait state is inserted in each DRAM bus cycle.

DRAM refresh is performed automatically, but only **/CAS** before **/RAS** operation is supported. Refresh cycle time per 1024 cycles is 125ms. During power on when it is time to refresh DRAM and they are not being accessed, the refresh cycle starts. When power down, no DRAM access occur, and DRAM can't backup the data.

6.2.2.4. CPU Interrupts

There are two ways to interrupt CPU, maskable interrupt (**/MIRQ**) and non-maskable interrupt NMI (**/DEBUG**,**/PWRDWN**). Modem interrupt **/MIRQ** must hold active until the CPU processes the request. The input **/PWRDWN** is OR'ed with the input **/DEBUG** and then

synchronized before NMI input. An active NMI signal branches program execution to the address stored in NMI vector. When NMI represents power down, indicated by **/PWRDWN** low, the NMI control firmware performs the necessary maintenance operation and then enable lockout register to protect battery backed-up registers during power down.

6.2.2.5. RESET logic and Watchdog Timer

There are two power resets, battery power reset (**/BATRST**) and prime power reset (**/PWRDWN**). The battery power reset initializes battery backed-up logic when battery is first applied or changed. Prime power reset initializes all non-battery powered logic when system power is turned on. Another reset is generated by watchdog timer which guards against firmware lockup. **/RESET** pin provides a reset signal to external devices when power down or watchdog reset is active. If **/BATRST** become low, D2 ON, so that U1C Op output low and reset modem.

6.2.2.6. Real Time Clock

The Real Time Clock (RTC) circuit is required to maintain current time information under primary power and battery backup conditions. RTC tracks seconds, minutes, hours, days, months and years elapsed since the reference year, 1999. The tracking range of RTC is up to 32 years, and automatic compensation is made for leap years.

6.2.3 Scanner Controller

Only one type of scanner can be applied, Hualing. Power of scanner LED is on/off controlled by transistor switch Q1 and Q2. **CLK2** is 500KHz clock to scanner and **START** is periodic pulse for every 10ms. The scanner outputs video signal synchronized to clock. A flash A/D converter in FC200-M samples the video signal. FC200-M performs shading correction to correct scanner data for non-uniformity of 1728 image sensors. State of art image processing on both text and halftone images are provided. Edge enhancement improves image quality on halftone, and dynamic contrast control improves text image. An internal dither table programmable up to 8X8 byte matrix is provided to perform halftone process.

The video signal is amplified by adaptive gain in order to let white video level close to reference level of flash A/D converter.

6.2.4 Motor Drivers

Signal **SM [0..3]** are selected as scanner control lines. The stepping pattern signals determined by firmware outputs to scanner motor via current drivers, transistor array.

6.2.5 Switch and Sensors

Cover on/off switch is debouched by a RC couple. Paper sensor output is shunt by a noise-filtering capacitor.

6.2.6 Battery and Power Down Reset

Prime power failure is detected by a voltage comparator that compares +5V supply with a constant reference voltage 4.5V provided by transistor voltage source.

Battery BT2 backs up VXFC, SRAM and DRAM in the beginning of power down, and DRAM needs more standby power and higher voltage than VXFC and SRAM . Therefore, voice and image stored in DRAM can be retained for nice hours while the RTC date and user data can keep for three days.

6.2.7 Fax Modem Circuit

Modem chip RFX96V24 (or RFX144V24) feature an advanced Rockwell proprietary voice compression algorithm. This algorithm can compress voice to 4.7 kbps with near toll quality playback. DTMF and tone detection are available during voice codec operation. Echo cancellation techniques are employed during playback to allow DTMF and tone detection. and the modem can operate over the public switched telephone network (PSTN). The RFX96V24 (or RFX144V24) is designed for use in Group 3 facsimile machines. The modem satisfiles the requirement specified in CCITT recommendations V.29, V.27 ter, V.21 Channel in 2, T.4, and Caller ID reception , and meets the binary signaling requirements of T.30. The pin assignments for 100-pin PQFP are listed in table 6-10, and its digital interface characteristics is listed in table 6-11, analog interface is listed in table 6-12.

Table 6-10 Modem RFX96V24(or RFX144V24) Pin Functions

Pin No.	Signal Label	I/O Type	Interface	Pin No.	Signal Label	I/O Typ	Interface
1	RS4	IA	Host Parallel Interface	23	TMODE	MI	MDP:RMODE (18)
2	RS3	IA	Host Parallel Interface	24	TXDAT	MI	MDP:SR4OUT (90)
3	RS2	IA	Host Parallel Interface	25	AVDD	PWR	VCC through power decoupling filter
4	RS1	IA	Host Parallel Interface	26	-TALK	OD	Line interface
5	RS0	IA	Host Parallel Interface	27	AGND1	GND	AGND
6	VDD1	PWR	VCC	28	TXA1	O(DD)	Analog Switch/Line Interface (TXA1)
7	D7	IA/OB	Host Parallel Interface	29	TXA2	O(DD)	Analog Switch/Line Interface (TXA2)
8	D6	IA/OB	Host Parallel Interface	30	DGNDA2	GND	AGND
9	D5	IA/OB	Host Parallel Interface	31	NC		
10	D4	IA/OB	Host Parallel Interface	32	NC		
11	D3	IA/OB	Host Parallel Interface	33	NC		
12	D2	IA/OB	Host Parallel Interface	34	NC		
13	D1	IA/OB	Host Parallel Interface	35	VAA1	PWR	VCC through power decoupling filter
14	D0	IA/OB	Host Parallel Interface	36	-SLEEP	MI	MDP:GPO0 (71); XIA:PD (21)
15	-WRITE	IA	Host Parallel Interface	37	AGND2	GND	AGND
16	DGND1	GND	DGND	38	RIN	I(DA)	Analog Switch/Line Interface (RIN)
17	RXOUT	MI	MDP:SR3IN (79)	39	VC	MI	AGND through capacitors
18	RMODE	MI	MDP:TMODE (23) & SR1IO (88); XIA: RMODE (7)	40	VREF	MI	VC through capacitors
19	TSTROBE	MI	MDP:IA1CLK (86)	41	NC		
20	TRESET	MI	MDP: SA1CLK	42	NC		
21	DGNDA1	GND	AGND	43	DGNDA3	GND	AGND
22	N/C			44	SPKR	O(DF)	Analog Switch/Speaker Circuit (SPKR)
45	VAA2	PWR	VCC through power decoupling filter	73	XTLI	I	Crystal/Clock Circuit
46	-OH	OD	Line Interface	74	XTLO	O	Crystal/Clock Circuit
47	-POR	MI	MDP:-RESET (72); XIA:-POR (3)	75	XCLK	OD	Diagnostic Circuit
48	CLKIN	MI	MDP:IACLK (50)	76	YCLK	OD	Diagnostic Circuit
49	NC			77	VDD3	PWR	VCC
50	IACLK	MI	MDP:CLKIN (48); CIA:CLKIN (4)	78	-IRQ2	OC	Host Parallel Interface
51	NC			79	SR3IN	MI	MDP:RXOUT (17)
52	-CS	IA	Host Parallel Interface	80	DGND3	GND	DGND
53	-READ	IA	Host Parallel Interface	81	DGND4	GND	DGND
54	GPI2	IA	General Purpose Input	82	SR4IN	MI	XIA:RXDAT (6)
55	GPI3	IA	General Purpose Input	83	SR3OUT	MI	XIA:TXDAT (13)
56	GPI4	IA	General Purpose Input	84	EYESYNC	OA	Eye Pattem Circuit
57	GPI5	IA	General Purpose Input	85	EYECLK	OA	Eye Pattem Circuit
58	VDD2	PWR	VCC	86	IA1CLK	MI	MDP:TSTROBE (19)

Pin No.	Signal Label	I/O Type	Interface	Pin No.	Signal Label	I/O Typ	Interface
59	GPI6	IA	General Purpose Input	87	SA1CLK	MI	MDP:TRESET (20)
60	GPI7	IA	General Purpose Input/Line Interface	88	SR1IO	MI	MDP:TMODE (23) & RMODE (18)
61	GPO7	OB	General Purpose Output	89	EYEXY	OA	Eye Pattem Circuit
62	GPO6	OB	General Purpose Output	90	SR4OUT	MI	MDP: TCDAT (24)
63	GPO5	OB	General Purpose Output	91	NC		
64	GPO4	OB	General Purpose Output	92	-RLSD	OA	DET Serial Interface
65	GPO3	OB	General Purpose Output	93	DCLK	OA	DTE Serial Interface
66	DGND2	GND	DGND	94	-EN85	IA	Auxiliary Circuit
67	-CTS	OA	DTE Serial Interface	95	GPI0	IA	General Purpose Input
68	-IRQ1	DC	Host Parallel Interface	96	-RTS	IA	DTE Serial Interface
69	GPO2	OB	General Purpose Output	97	DGND5	GND	DGND
70	GPO1	OB	General Purpose Output	98	GPI1	IA	General Purpose Input
71	GPO0	OB	MDP:-SLEEP (36)	99	TXD	IA	DTE Serial Interface
72	-RESET	OA	Reset Circuit	100	RXD	OA	DTE Serial Interface

Notes:

I/O types:

MI= Modem interconnect.

IA,IB,IC,ID= Digital input.

OA,OB,OC,OD= Digital output.

I(DA)= Analog input.

O(DD), O(DF)= Analog output.

NC=No external connection allowed.

Figure 6-11 Digital Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Input High Voltage	V_{IH}				VDC	
Types IA and IB		2.0	-	V_{CC}		
Types IC and ID		0.8 V_{CC}	-	V_{CC}		
Input High Current	I_{IH}				μA	VCC=5.25V, V_{IN}=5.25V
Type IB		-	-	40		
Type IC		-	-	2.5		
Input Low Voltage	V_{IL}				VDC	
Type IA, IB, ID		-0.3	-	0.8		
Type IC		-0.3	-	0.2(VCC)		
Input Low Current	I_{IL}				μA	VCC= 5.25V
Types IB and IC		-	-	-400		
Input Leakage Current	I_{IN}				μADC	V_{IN}= 0 to +5V,
Type IB		-	-	$\pm$ 2.5		VCC= 5.25V

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Output High Voltage	V_{OH}				VDC	
Type OA and OB		3.5	-	-		I_{LOAD}= -100 μ A
Type OD			-	Vcc		I_{LOAD}= 0 mA
Output Low Voltage	V_{OL}				μ VDC	
Types OA and OC		-	-	0.4		I_{LOAD}= 1.6 mA
Types OB		-	-	0.4		I_{LOAD}= 0.8 mA
Types OD		-	-	0.75		I_{LOAD}= 15 mA
Output Leakage Current	I_{LO}				μ ADC	V_{IN}= 0.4 to VCC-1
Type OA and OB		-	-	± 10		
Capacitor Load	C_L				pF	
Type IA and ID		-	-	10		
Type IB		-	-	20		
Capacitor Drive	C_D				pF	
Type OA, OB, OC		-	-	10		
Circuit Type						
Type IA						TTL
Type IB						TTL with pull-up
Type IC						CMOS with pull-up
Type ID						POR
Type OA and OB						TTL with 3-state
Type OC						Open drain
Type OD						Relay driver
Type OC and OE						Open drain
Type OD						Clock

Figure 6-12 Analog Interface Characteristics

Name	Type	Characteristics	Value
MDP			
RIN	I(DA)	Input Impedance	> 70 KΩ
		Maximum Input Voltage	1.7 VP-P
		Reference Vottage*	+2.5 VDC
TXA1, TXA2	O(DD)	Minimum Load	300Ω
		Maximum Capacitive Load	0.01uF
		Output Impedance	10Ω
		Maximum Output Voltage	1.2 VP-PV @9600Hz sample rate
			2.7 VP-P @8000Hz sample rate
		Reference Voltage*	+2.5 VDC

		DC Offset Voltage	± 200mV
SPKR	O(DF)	Minimum Load	300Ω
		Maximum Capacitive Load	0.01uF
		Output Impedance	10Ω
		Maximum Output Voltage	2.0 VP-P
		Reference Voltage*	+2.5 VDC
		DC Offset Voltage	± 20mV
XIA			
RIN (MICOUT)	I (DA)	Input Impedance	> 70 KΩ
		Maximum AC Input Voltage	1.7 VP-P
		Reference Voltage*	+2.5VDC
TXA1 (SPLHI), TXA2 (SPKLO)	O (DD)	Minimum Load	300Ω
		Maximum Capacltive Load	0.01uF
		Output Impedance	10Ω
		Maximum AC Output Voltage	2.7 VP-P
		Reference Voltage*	+2.5VDC
		DC Offset Voltage	± 200mV
*Reference Voltage provided internal to the devica.			

The modem (RFX96V24 or RFX144V24) must be connected to an external crystal circuit consisting of a 49.92MHz crystal and two capacitors. The analog power and ground are decoupled from +5V and digital ground by bead cores. Power-on reset **/POR** is provided by FC200-M. Output of received analog signal is available on pin **SPKR** and is multiplexed with signal **TONE** before input to audio amplifier U5. The volume of voice is controled by the buit-in circuit of the modem, and the echo cancellation is made by subtracting TXA for RXA.

6.2.8 Memory

There are 1 chip of 16 Mega bits DRAM mounted on board. SRAM of 32K bytes stores user and system data. DRAM was backed up by battery BT2, SRAM is backed up by BT1. Flash Memory of 128K bits is installed on socket for various firmware versions are provided.

6.2.9 Network Interface

There are 7 relay drivers implemented by U10. While power-on reset, all relays are controled at normal state. The polarity of Caller ID be detected by U21.

6.2.10 Panel Interface

Operation panel output bus **OPO[0..7]**, input bus **OPI[0..3]** and control output **LEDCTL**, **LCDCS** supports 32-keys keyboard and 3 LEDs. **LEDCTL** disables LEDs during keyboard strobing in order to prevent the dim LED glow. Also **OPO[0..3]** and **LCDCS** drive LCD module.

6.2.11 Speaker Phone

When pressing keys or error operating by user, different sound effect will generating in speaker. The voice control is provided with 3 level by U13. **U3B** selects to speak by **MUTE** with signal **TONE** as well as **voice** before input to audio amplifier U5

6.3 Printer Board Circuit Description

The system architecture is built around the HP ASIC and a MC68EC00 CPU. The ASIC provides hardware for the control of printing, paper motion, carriage motion, HOST interface, Print head ID detect, image smoothing, and print head drop detect. The MC68EC000 provides a powerful general purpose CPU for control of the ASIC and other data processing.

The printer board consists of following parts:

6.3.1 Printer board to Inkjet head interface

The decoders U1~U6 decode the firing pulses which drive nozzles to print out data via J1 and J2.

The U10A gets the HEAD ID signal to detect the cartridge is the HP's cartridge or not.

6.3.2 Paper & Carriage motor

The carriage motor is driving by U14.

U13 was the motor driving to control the paper feeding.

6.3.3 Sensors & Host connector

There are two sensors to detect the paper and cartridge status.

The printer status is controlled by main board interface.

6.3.4 Printer head supply detect

Power board provided the printer working voltage.

U15 is a voltage regulator, supplied a accuracy voltage reference.

U11C is a error amplifier amplifies the difference between the VFB voltage and the VREF voltage and thus regulates the +HV output voltage.

U11D is a ON/OFF controller, controls whether +HV is high or low and the slew rate of the transitions high and low.

U17 is a current gain stage provides enough current drive to drive the required loads.

6.3.5 Microprocessor and Memory

The interface between driver ASIC U18 and MC68EC000 are address bus SA[0…17] and data bus SD[0…7]. This ASIC is also the interface used to link MC68EC000 and main system. When cartridge is installed, The microprocessor is MC68EC000 connecting to other internal and external printer board functions over an 8 bit data (D0~D7) and 18 bit address bus and dedicate control lines.

SRAM of 32K byte stores system data and image data which is to be printed out. PROM of 128k byte is installed on socket for firmware versions which provides general functions for printing.

6.4 Key Board Circuit Description

The keyboard consists of following parts:

(1) Dot Matrix LCD Module

It has character generator and data RAM on board which provide easy interface for host FC200. Its bus operation is 4-bit access.

(2) LED Drivers and LEDs

Three LEDs are driven by control **LEDCTL** via transistor Q1 and strobe by **OP05**, **OP06** and **OP07**.

(3) Key Switch Matrix

OP00 to **OP07** strobe each key matrix column in sequence, and **OPI0** to **OPI3** are read by FC200 to determine which key is pressed.

(4) Document Sensor & ADF Sensor.

Detects any document fed in guide.

6.5 SIMCRAD Board Circuit Description

Used the IC CARD CONNECTOR by OMRON.

The circuit connected to the main board, then main board to read or write the SIM CARD.

6.6 NCU Circuit Diagram Description

6.6.1 General Functions of NCU (Network Control Unit) Circuit

Network control for the switching between telephone and fax modem, and signal detection during phase A to E define by ITU-T.30.

(1) Dial tone detection

(2) Busy tone detection

(3) Ring detection

(4) CNG detection

(5) Generation of pulse dialling

(6) Network switching

6.6.1.1. Transmitting Data and Signal from Main Board to the Line Terminal

(1) Facsimile data

(2) Protocol signal

(3) Dialling signal

(4) Voice signal

6.6.1.2. Receiving the Signal and Data from the Line Terminal to the Main Board

(1) Facsimile data

(2) Protocol signal

(3) Dialling signal

(4) Voice signal

6.6.2 Dialling Method

6.6.2.1. DTMF dialling and pulse dialling selection (Optional Function)

Set the slide-switch on the bottom of the fax machine to “P” or “T” position to choose the dialling method.

T: DTMF (Tone) dialling

P: Pulse dialling

6.6.2.2. DTMF dialling

Main board generates the DTMF signal and transmits the signal to J4 pin2 “TX”.

6.6.2.3. Pulse dialling (Optional Function)

Main board controls the reed relay K1 switching to generate the make and break duration.

Dialling signal loop:

J1→L1→JP24 (or K6)→LP1→K2→K1→R2→T1→R3→JP33→K2→ JP9 (or LF1//CF1) →JP1→JP24 (or K6) →L2→J1

6.6.3 Ringing Detection

The ringing signal detection circuit includes D8, ZD5, ZD6, R11, C10 and PH1.

Capacitor C10 is a DC blocked. Photo-coupler PH1 is an optical signal detector.

Ringing signal detection loop:

J1→L1→JP24 (or K6)→LP1→K3→CS1→J5→C10→R11→ZD5, ZD6→ PH1//D8→K2→JP9 (or LF1//CF1)→JP1→JP24 (or K6)→L2→J1

6.6.4 Fax Message Receiving

When the fax machine is at automatic mode and a valid ring signal is detected, the machine will go to loop state and receive fax message.

Another situation, when the fax machine is at manual mode and the machine detected “CNG” signal or press the “START” key by user during loop state the machine will beginning to receive fax message.

The receiving signal will come from J4 pin1 “RX” to main board.

FAX Loop:

J1→L1→JP23 (or K6)→LP1→K2→K1→R2→T1→R2→JP33→K2→JP9(or LF1//CF1)→LP1→JP24(or K6)→L2→J1

6.6.5 Fax Message Transmitting

After feeding document into the document feeder, dial the destination fax number and press “START” key, the fax machine will go to loop state and start to send the fax message.

The fax signal will generate from main board and transmit to J4 pin 2 “RX”.

6.6.6 Built-in Handset and Serial Equipment Detection

When the handset of the fax machine or the serial connecting equipment (i.e. Answer machine or telephone) is picked-up, the fax machine will detect the loop current and show “OFF HOOK” on the LCD screen.

The loop current will be detected by current sensor CS1.

6.6.7 Voice message record and play (Only for TF-300PT)

When the machine records the voice message using built-in handset (MEMO & OGM), the NCU circuit will switch the telephone power feeding to the internal power supply (DC 24V) by K6.

The path that voice messages play to or record form the PSTN line will be the same as fax message transmitting and receiving.

6.7 Telephone Circuit Diagram Description

6.7.1 General functions of telephone circuit

(1) Producing ringing signal

(2) Generate DTMF and pulse Dialling signal while pickup handset or power failure.

(3) Provide handset function.

6.7.2 Telephone IC AS2534 general description

The AS2534 (U1) is a 28 pin CMOS integrated circuit that contains all the function needed to from an electronic telephone. The device incorporates pulse and DTMF dialling, ringing generation, speech circuit.

6.7.3 Ringing

The ring signal is checked at pin FCI (U1 pin 21) for a valid ringing frequency. As soon as a signal is applied to the line, the internal ring frequency detector will start, provided that the signal level at FCI is above the trigger threshold (~2/3 V_{DD}). If the frequency is within the specified range(15~80Hz), the melody generator will send a bitstream out of MO (U1 pin 8), charging the piezo ringer via Q14 and discharging it via D17 and the internal high voltage open drain transistor. As soon as a non-valid or missing ring signal is detected, the bitstream is stopped and the circuit returns to standby.

(1) Ring signal detection path:

J1→LP1→K3→CS1→C12→ZD7→R16→U1 pin21 (FCI)

(2) Ringing signal generation path:

J1→LP1→K3→CS1→C12→R15→Diode-bridge (D11~D14)→J5 (Hook-switch)→C36//R47 (Ringer supply)

6.7.4 DTMF Dialling

During DTMF dialing the same line conditions as in Speech mode apply, except that speech is muted in both directions and a confidence tone is sent to the Rx amplifier. The DTMF signal is modulated to the line by controlling the shunt transistor, Q8. During inter-digit pauses speech is also muted.

DTMF level is adjusted by a DC voltage at the MFL (U1 pin2) input. This voltage is set by a voltage divider (R40, r41), connected from AGND to V_{SS}.

The DTMF timing is set by D15 and D16. The pulse time/pause time is 82/160ms with D15, and 82/82ms with D16.

6.7.5 Pulse Dialling (Optional Function)

With pulse dialing, the line has to be interrupted during break periods and short circuit during make periods.

Break pulses are performed by Q5 being switched off. The on-off control signal is output from the HS/DP (U1 pin 10) switching Q7 (and in turn Q5) on and off.

Make pulses are performed by Q8 with Q5 being switched on. The base of Q8 (CS, U1 pin25) is pulled to V_{SS}.

Make/Break ratio is set by JP18 and JP19. The make time is 40ms with JP18 and 33ms with JP19.

6.7.6 Speech mode

6.7.6.1. Transmit

The electric handset microphone is supplied from the constant voltage at U1 pin27 (LI), filtered by R31 and C27. R32 and R33 are the bias resistors of the electric microphone. Transmit gain is set by both selecting the proper microphone type (sensitivity) and by varying R32 and R33.

Transmit frequency shaping can be done by C24, C25 (high pass) and C21 (low pass). R35 can be installed to attenuate the microphone signal without affecting the frequency response curve. Pin23 (M1) and pin24 (M2) are differential input of the microphone amplifier. Please note the proper connection of the M1 and M2 inputs in respect to the positive and negative side of the microphone.

6.7.6.2. Receive

Receive gain is set by both sensitivity of receiver and the value of R36.

Receive frequency shaping is done by C29 (low pass) and C28 (high pass). R36 is to attenuate the receiving signal.

6.8 Power Supply Description

The Skynet Model SNP-2950 is a fanless switching mode power supply used for TATUNG PPF(TF-300P) product. It is multi-output power supply which will be fixed in the fax.

6.8.1 Input Specification

6.8.1.1. Input Voltage

The range of input voltage is from 90V AC to 264V AC, the AC rating show on the label: 100~240V AC.

6.8.1.2. Input Frequency

The range of input frequency is from 47Hz to 63Hz.

6.8.1.3. Input Current

The input Current is 3A at 90VAC for adaptor.

6.8.1.4. Inrush Current

The inrush current will not exceed 30A at 230VAC Input, cold start 25℃ for adaptor.

6.8.2 Output Specification

6.8.2.1. Load Range

output	min. load	max. load	peak load	accuracy range
+5V	0.2A	0.5A		5.00V to 5.1V
+12V	0 A	0.1A		11.4V to 12.6V
-12V	0 A	0.1A		-11.4V to –12.6V
+24VA	0 A	1.2A	2.6A	22.8V to 25.2V
+24Vc	0 A	50mA		22.8V to 25.2V
+24Viso(floating)	0 A	30mA	50mA	21.5V to 26.4V

At factory the +5V output is set from 5.0V to 5.07V at max. load, and the accuracy of other outputs are checked to be within the specified accuracy range.

+24V a peak load at least 1 sec at 25°C.

6.8.2.2. Ripple and Noise

The peak to peak ripple and noise for +5V output is less than 50mV, for +-12V outputs are less than 50mV, for +24V, +24Vc outputs are less than 120mV, for +24Viso output are less than 240mV. Measuring is done by 15MHz bandwidth limited oscilloscope and terminated each output with a 0.47uF capacitor at max. load.

6.8.2.3. Line Regulation

The line regulation for all outputs are less than +-1% while measuring at max. load and +-10% of input voltage changing.

6.8.2.4. Load Regulation

The old regulation for the +5V output is less than +-1%, for +-12V outputs are less than +-3%, for +24V outputs are less than +-9%. Measuring is done by changing the measured output loadMin. Load and Max. load and other output is 60% max. load.

6.8.3 General Feature

6.8.3.1. Efficiency

The efficiency is higher than 72% while measuring at nominal line and max. load.

6.8.3.2. Hold Up Time

The hold up time is longer than 16ms at 220VAC input and max. load which is measured from the end of the last charging plus to when the main output drop to 95% output voltage.

6.8.3.3. Overload Protection

The power supply will go into latch off mode against short circuit or over load conditions. To recovery from over voltage protection must by cycle AC line OFF and ON. The +5V over load is 15A max.

6.8.3.4. Leakage Current

The leakage current is less than 3.5mA while measuring at nominal line and max. load.

6.8.3.5. HI-POT test

3000Vac for 1 sec. 10mA (input to output)

6.8.3.6. Insulation resistance

>10Mohm 500Vdc (Input to output)

6.8.3.7. AC Drop

AC input drop to 0V in 1/2 cycle duration and drop to 1/2 input in 1 cycle duration when the minimum input and maximum loading conditions that the output will not be influenced. (at 220Vac)

6.8.3.8. AC noise

A pulse width 1 uS, +- polarity, square wave, 500 volts input phase 0°C, 20°C, 180°C and 270°C influence for AC input shall not effect the output.

6.8.4 Environment Specification

6.8.4.1. Operation Temperature

0℃ to 40℃

6.8.4.2. Storage Temperature

-20℃ to 85℃

6.8.4.3. Operating Humidity

10%RH~95%RH

6.8.4.4. MTBF

50K hours min. Max. load at 25 °C ambient temperature.

6.8.4.5. Vibration

principal axes 2.2g cycling or dwell type. 30 minutes for each axis.

6.8.4.6. Altitude

Will operate properly at any altitude between 0 to 10000ft.

6.8.4.7. Shock

Meet IEC 950/4.2 mechanical strength and stress relief test.

6.8.5 International Standards

6.8.5.1. Safety Standards

Designed to meet the following standards :

UL 1950 D3

CAS 22.2 NO.234, 950

VDE EN 60 950

NEMKO

DEMKO

SEMKO

6.8.5.2. EMI Standards

Designed to meet the following conducted limits:

CISPR22 Level “B:

FCC “B”

Vfg 243

Designed to meet the following radiation limits

CISPR22 Level “B:

6.8.5.3. EMS standards

Designed to meet following standard:

IEC-801-2 8KV air discharge

IEC-801-4 1KV Criteria “A”

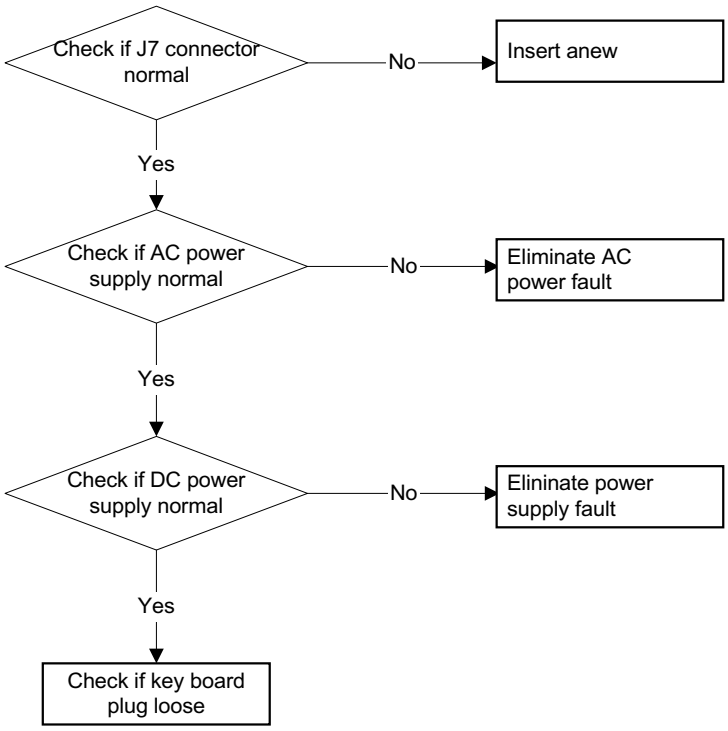
IEC-801-5 3KV

IEC-801-3 3V/m

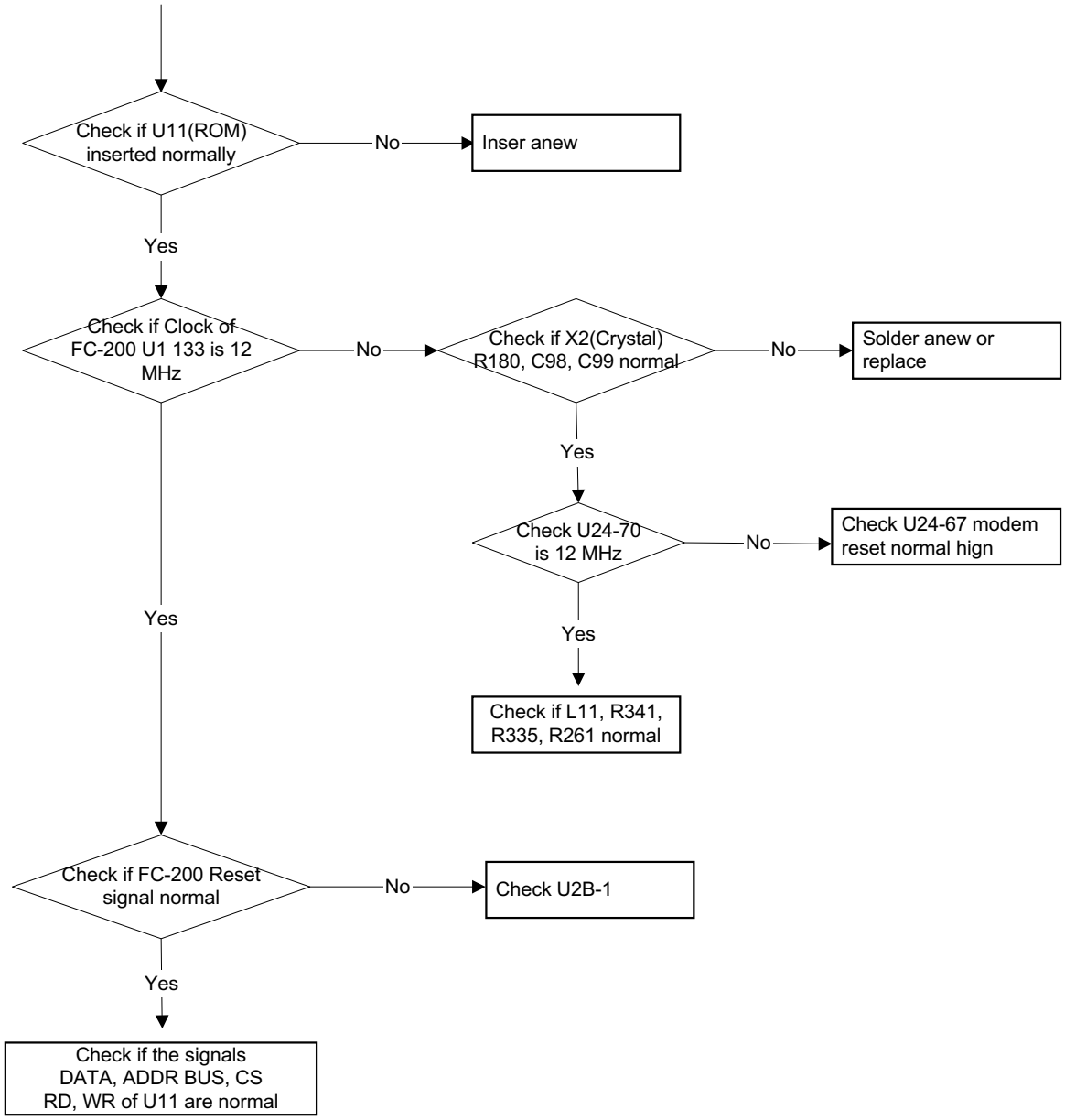
7. TROUBLESHOOTING

7.1 TF-300P (Vienna 1)

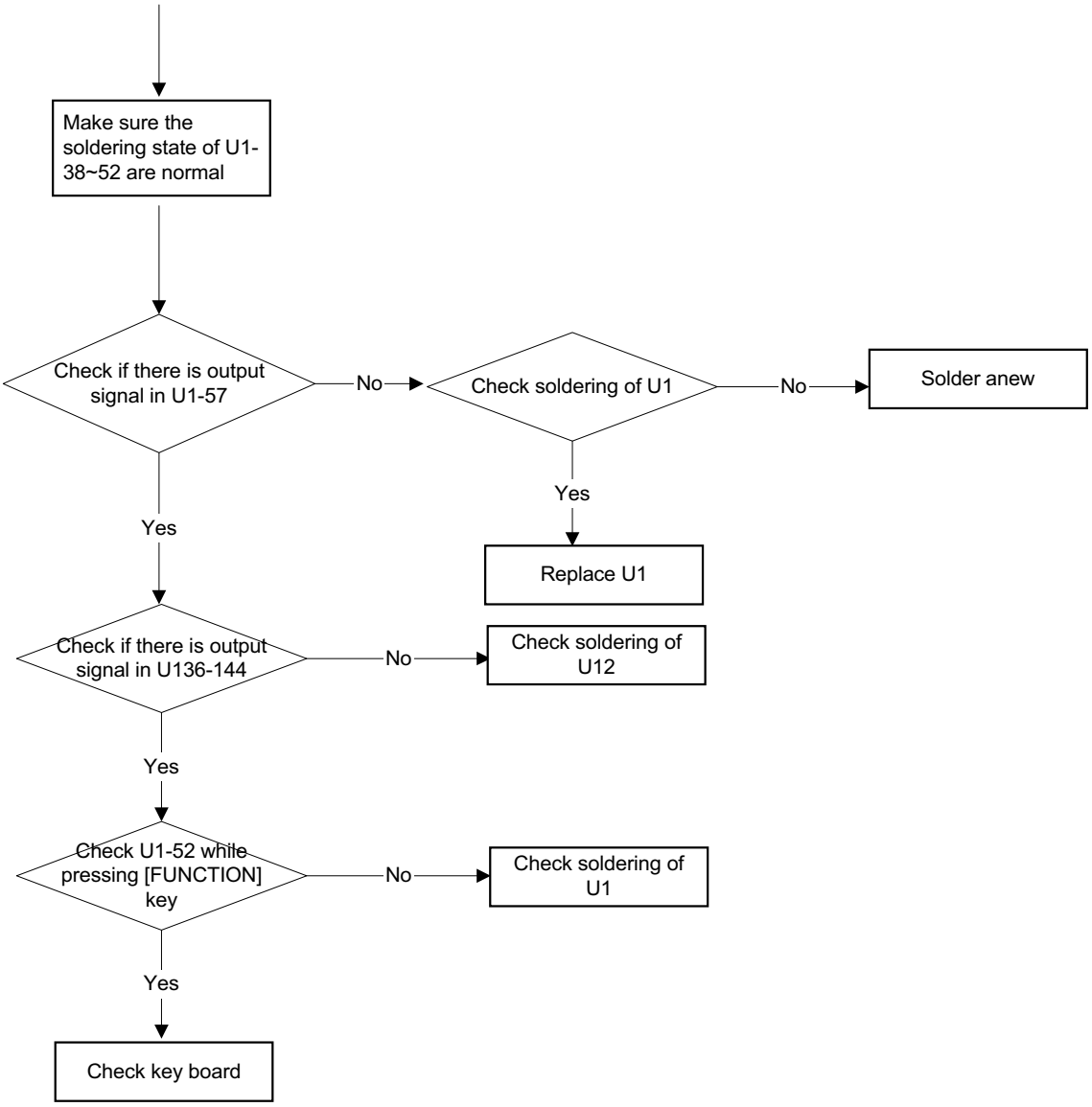
7.1.1 LCD Fails to Display after Power On



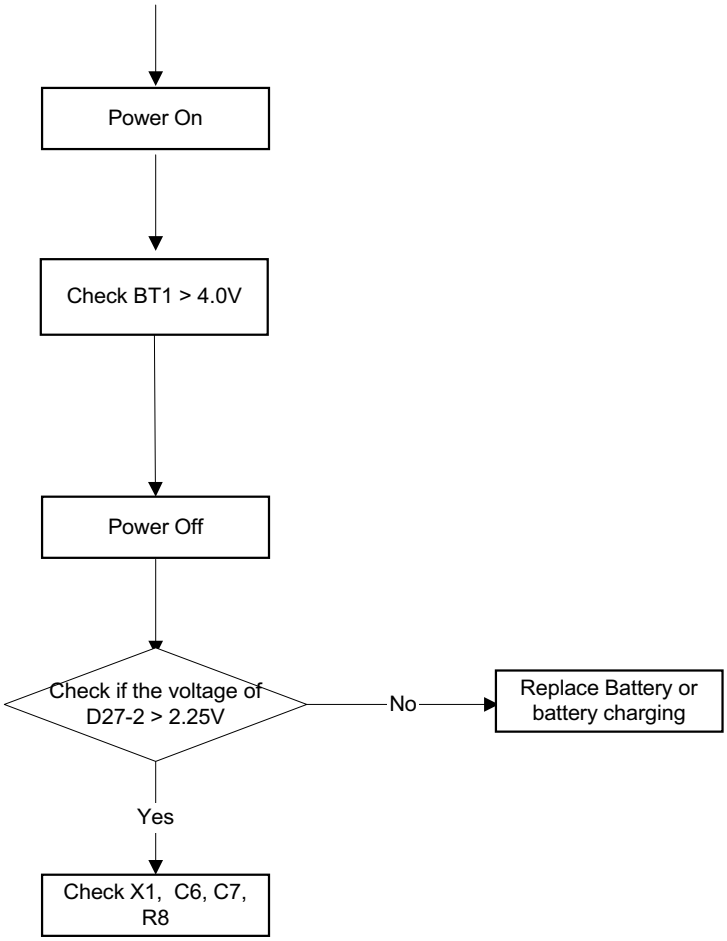
7.1.2 Half of LCD Display Full Black after Power On



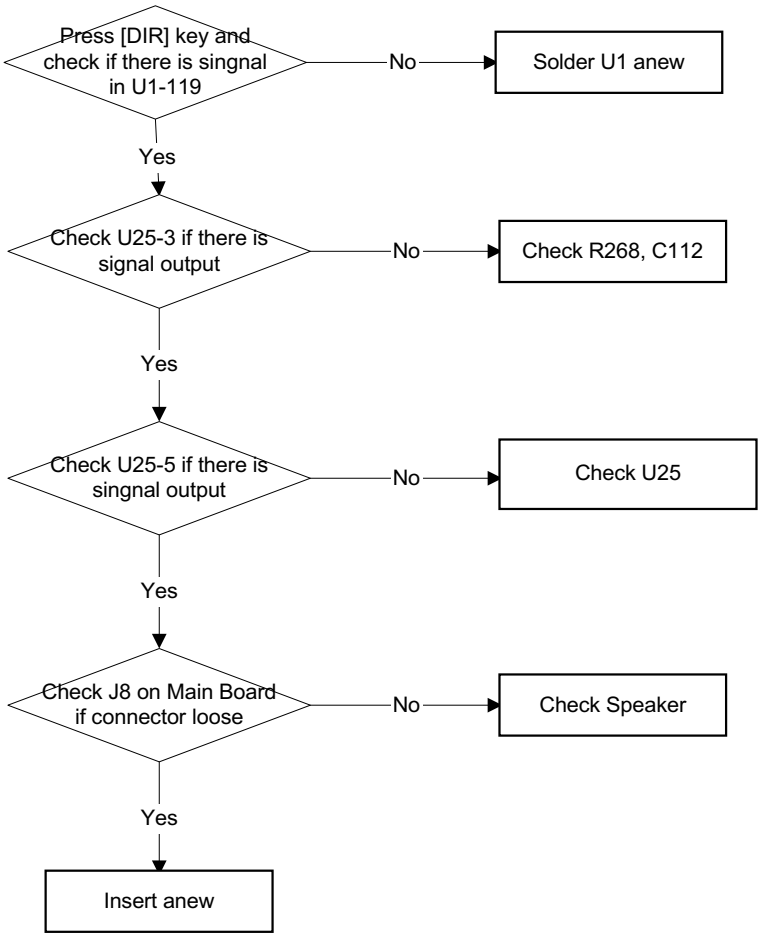
7.1.3 LCD Display Normal on Starting but Key Failed



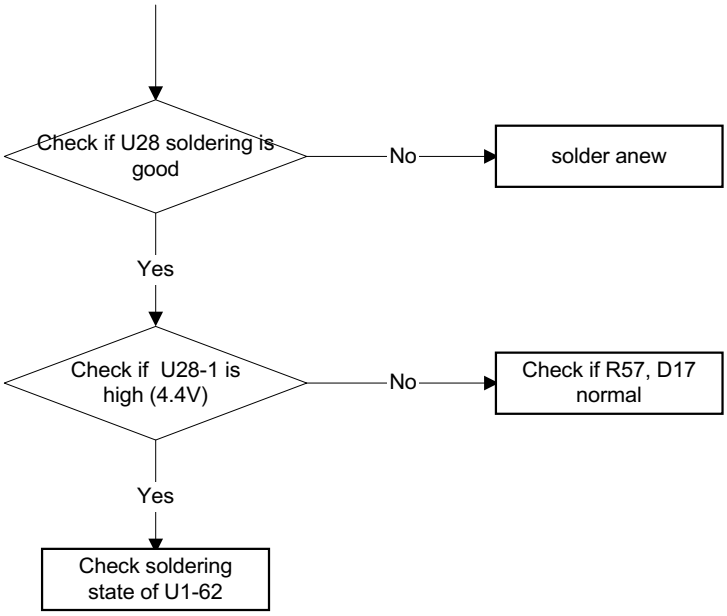
7.1.4 Time Display Abnormal



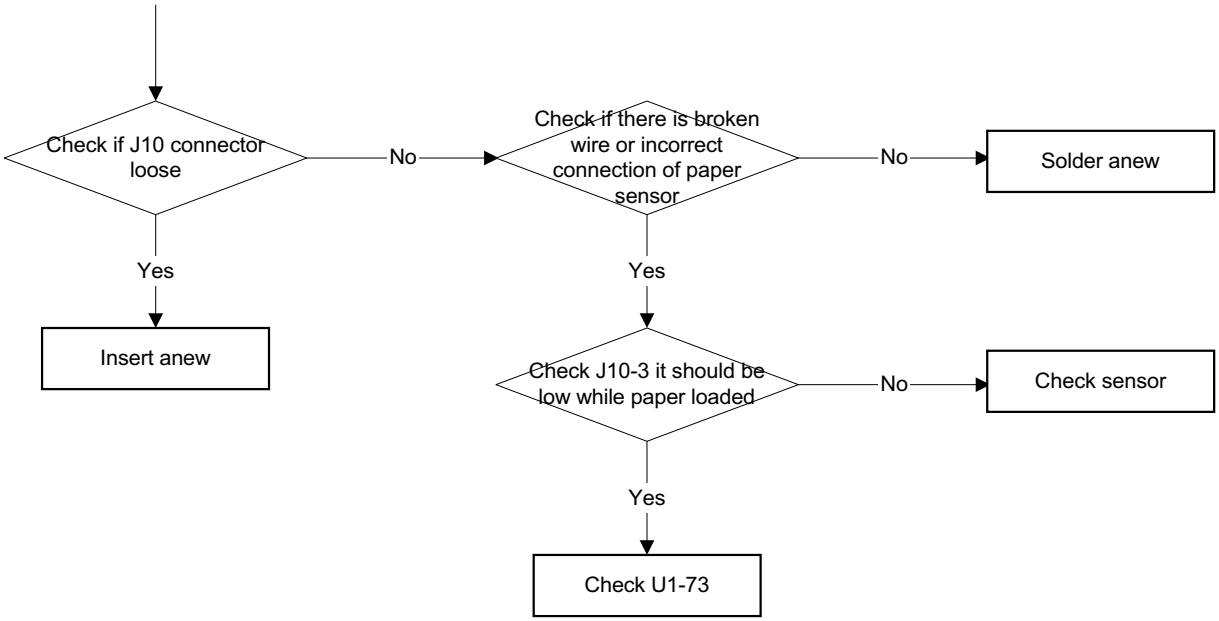
7.1.5 It Works Pressing Key but Speaker Remains Mute



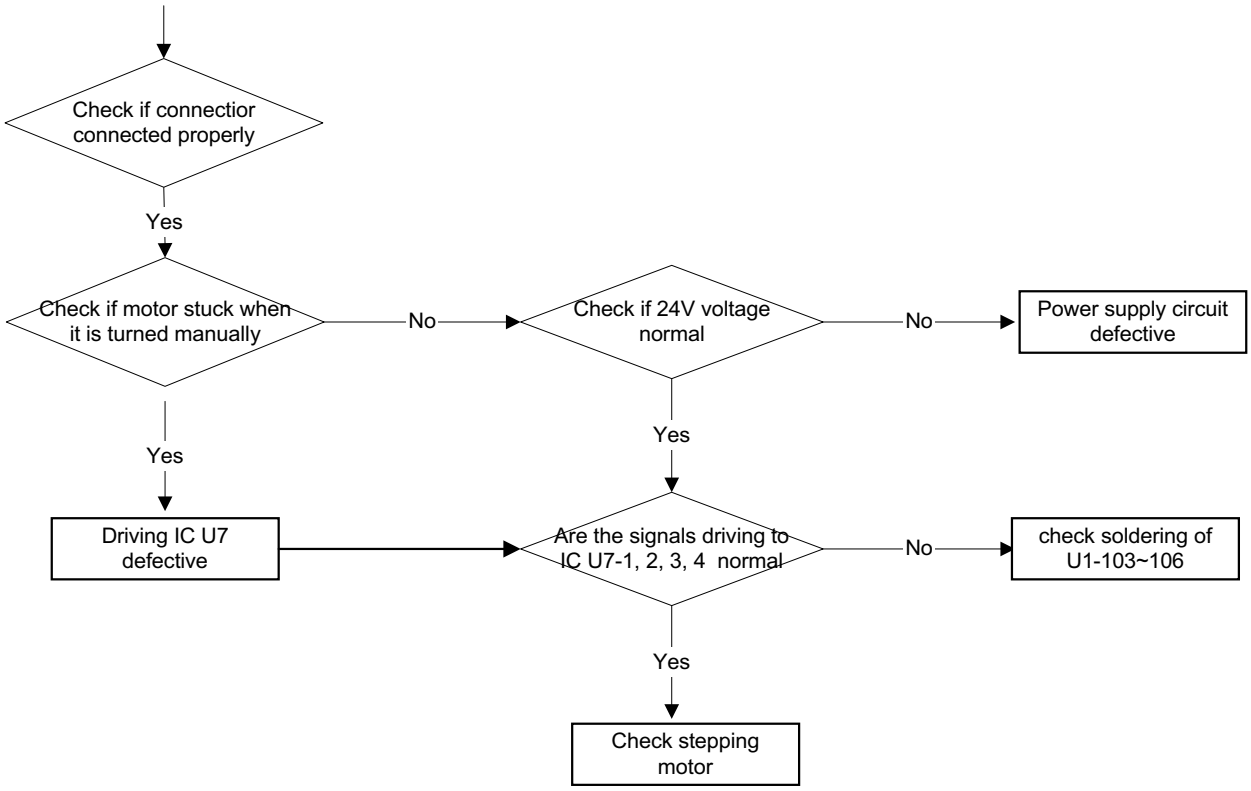
7.1.6 Reset on Starting



7.1.7 LCD Display "NO PAPER" while Recording Paper is Loaded

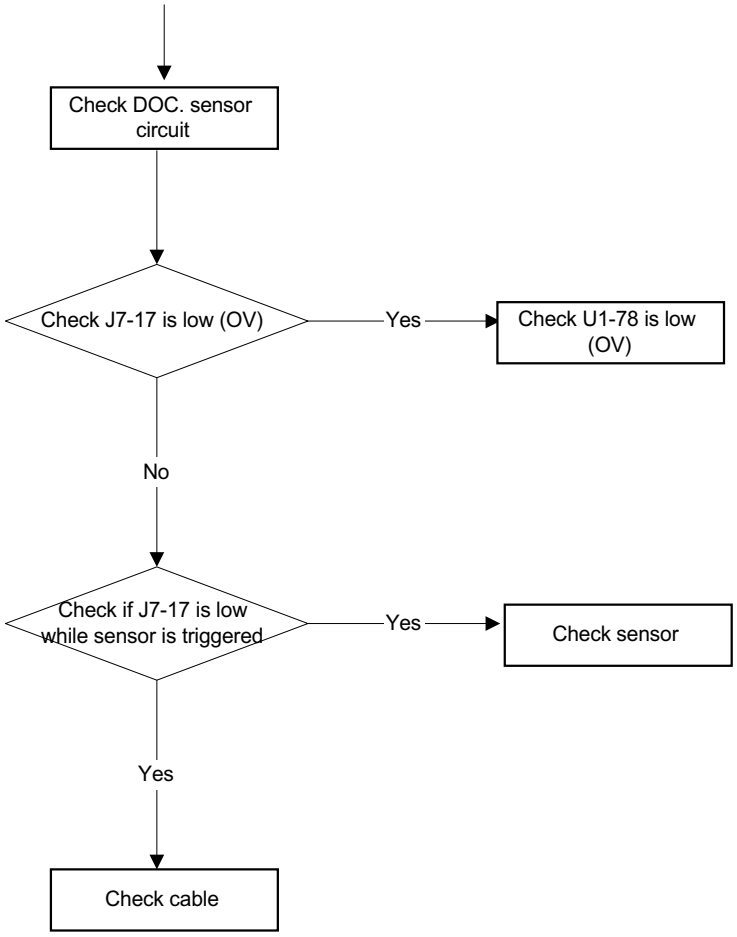


7.1.8 C.I.S. Motor Remains Motionless

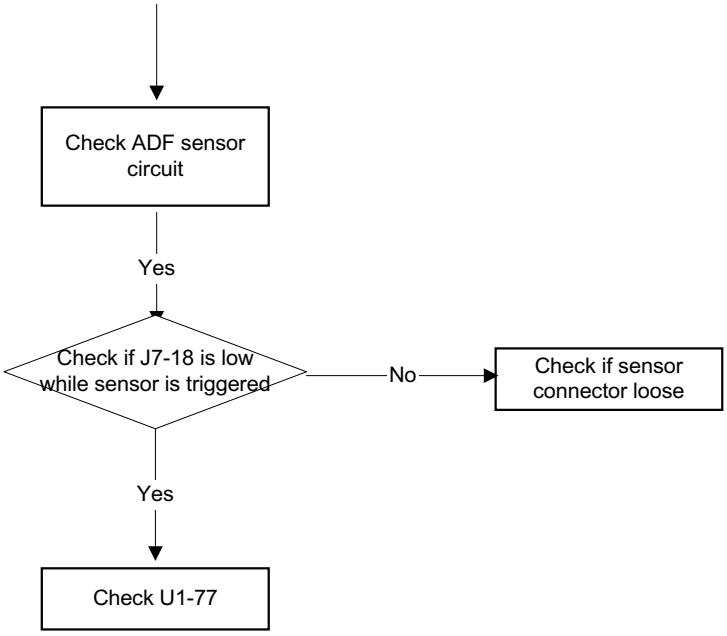


Note: While the motor is revolving, the signals of the pins of driving IC is 100Hz or 200Hz.

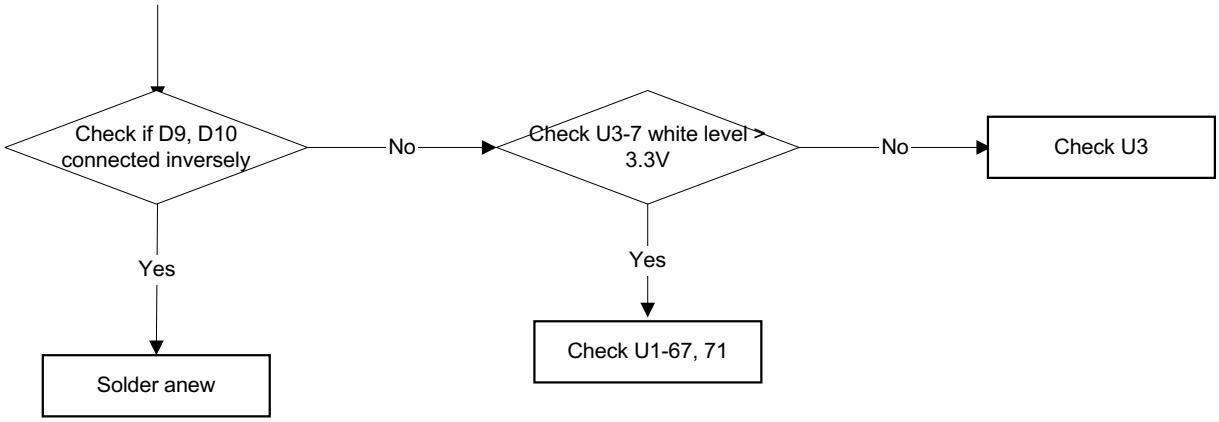
7.1.9 Failed to Feed Document



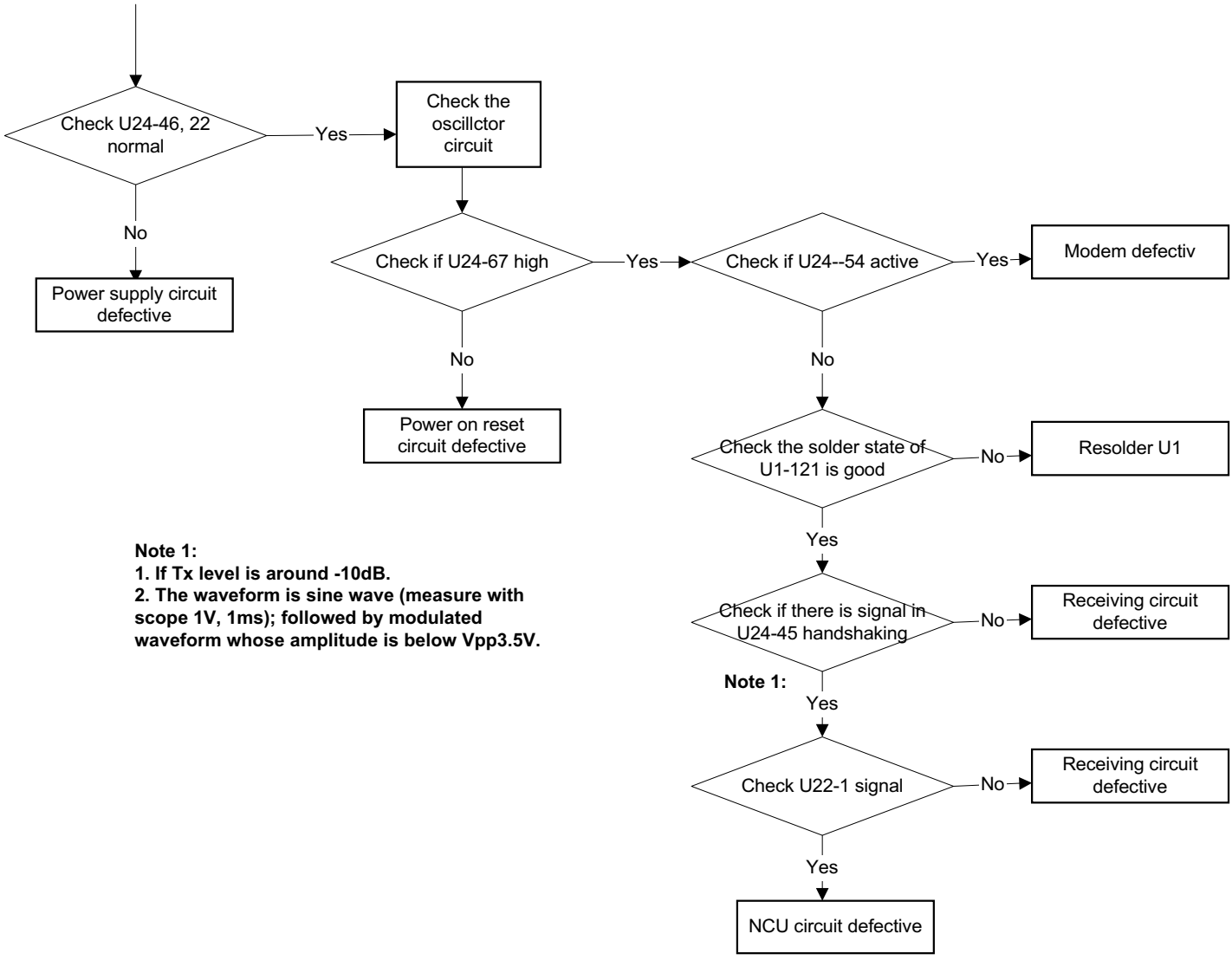
7.1.10 Over Feeding Document until "DOCUMENT JAM"



7.1.11 Copy Quality is Too Bright

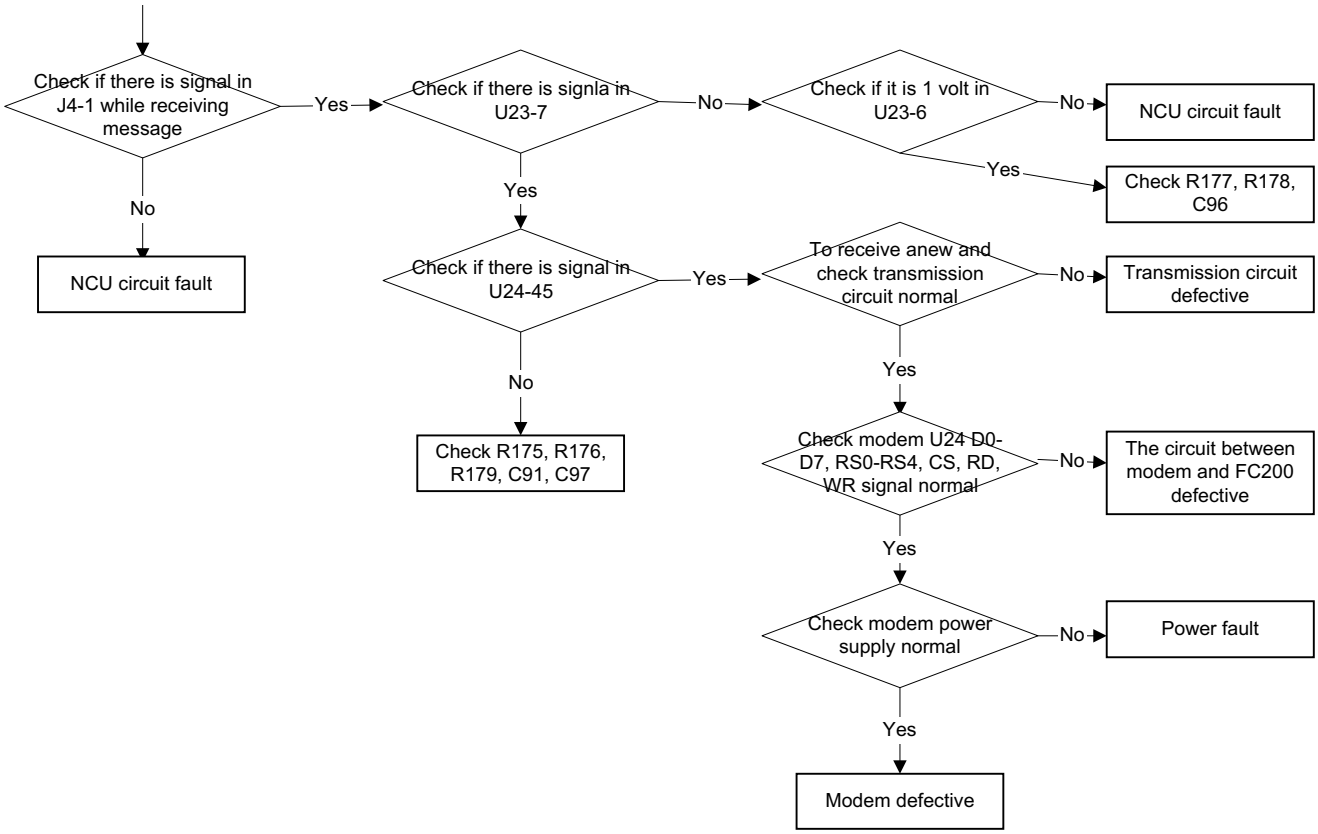


7.1.12 Failed to Transmit Successfully

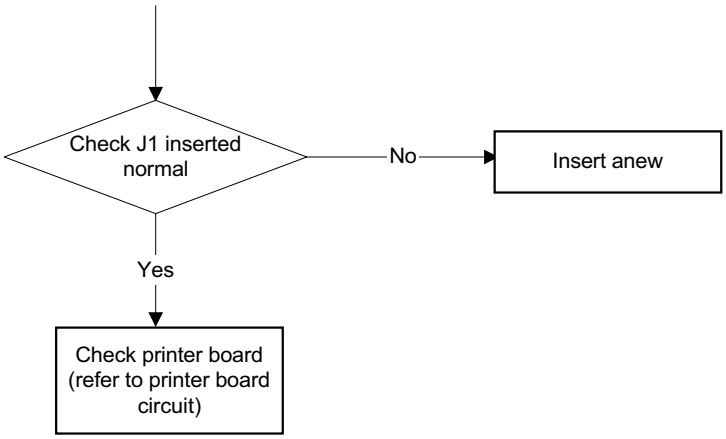


Note 1:
1. If Tx level is around -10dB.
2. The waveform is sine wave (measure with scope 1V, 1ms); followed by modulated waveform whose amplitude is below Vpp3.5V.

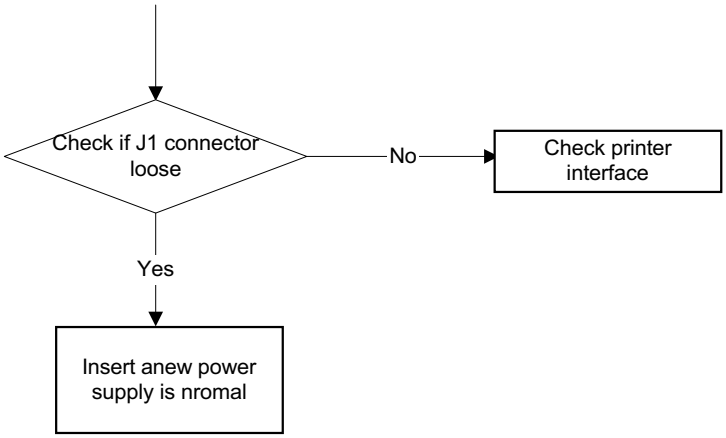
7.1.13 Failed to Receive Successfully



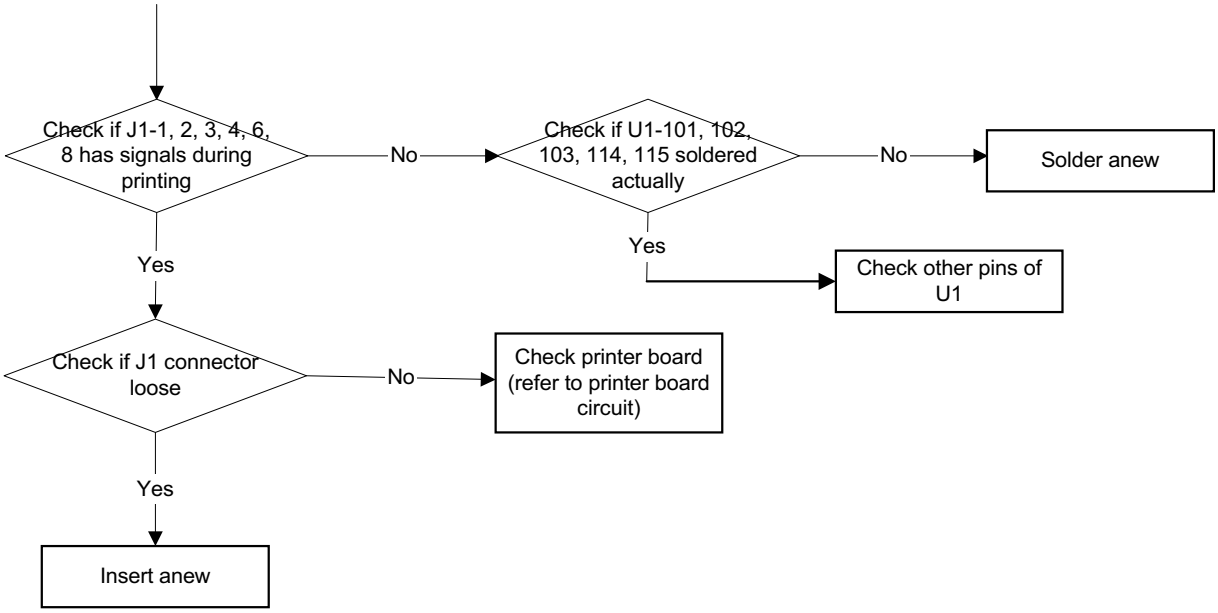
7.1.14 Printer Engine Off



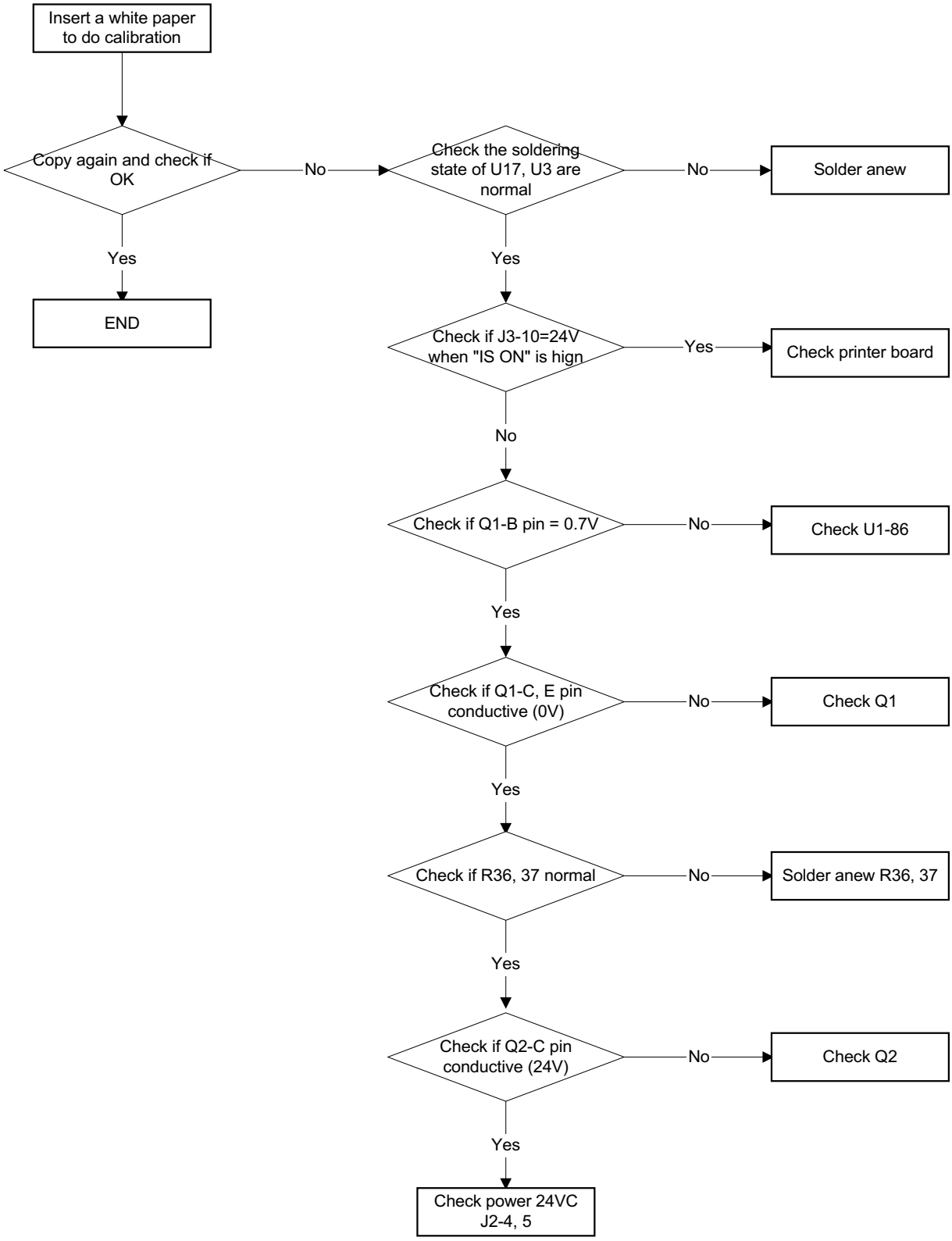
7.1.15 Printer Acts Failed



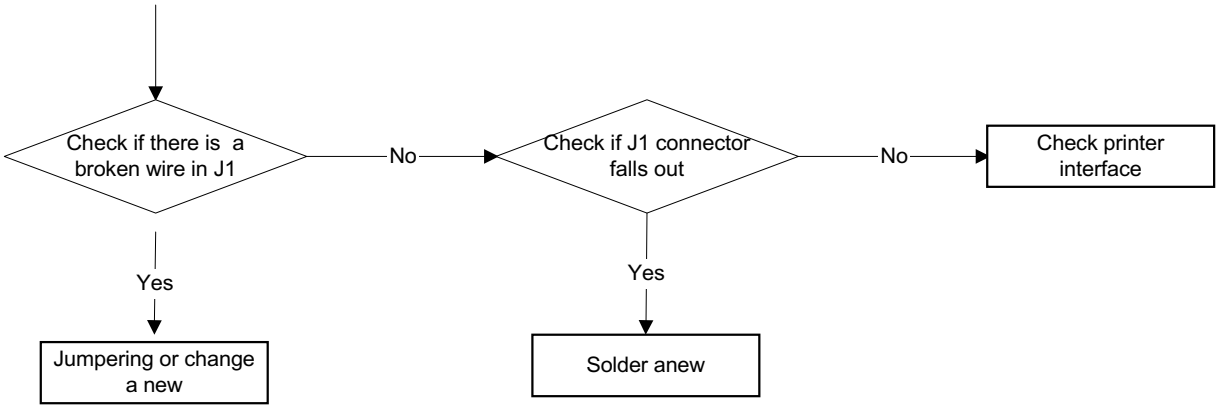
7.1.16 Certain Blocks Failed in Printing



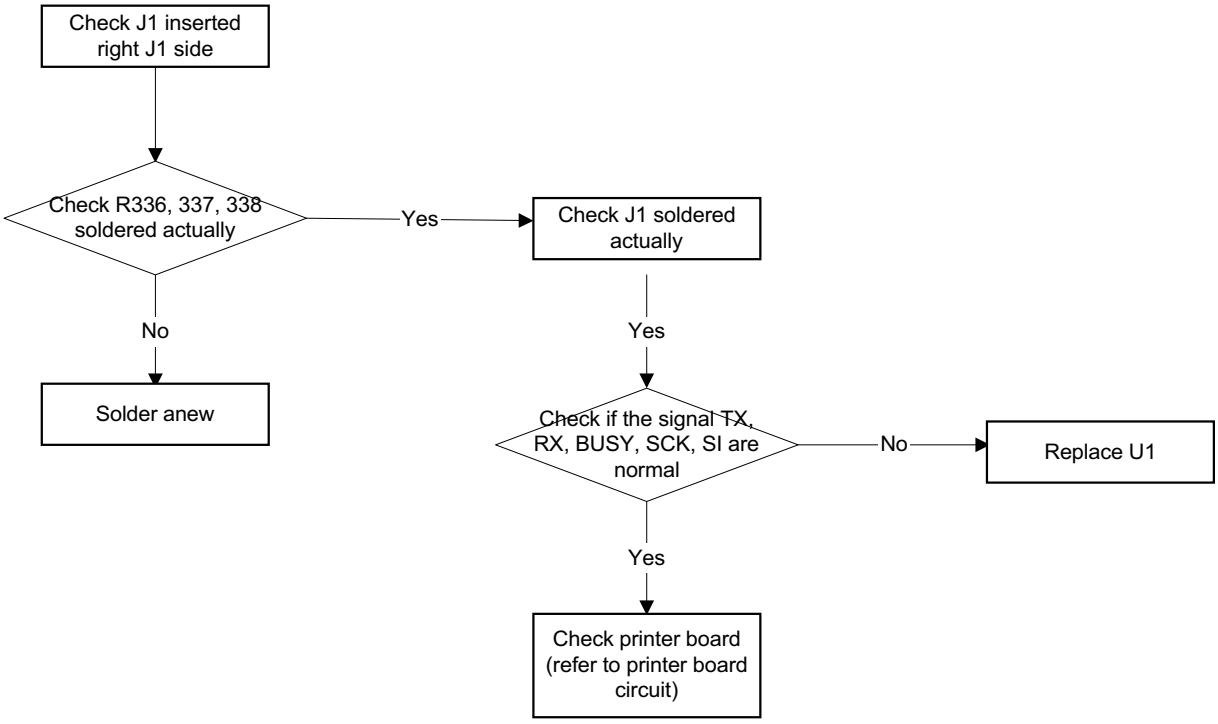
7.1.17 Copy All Black



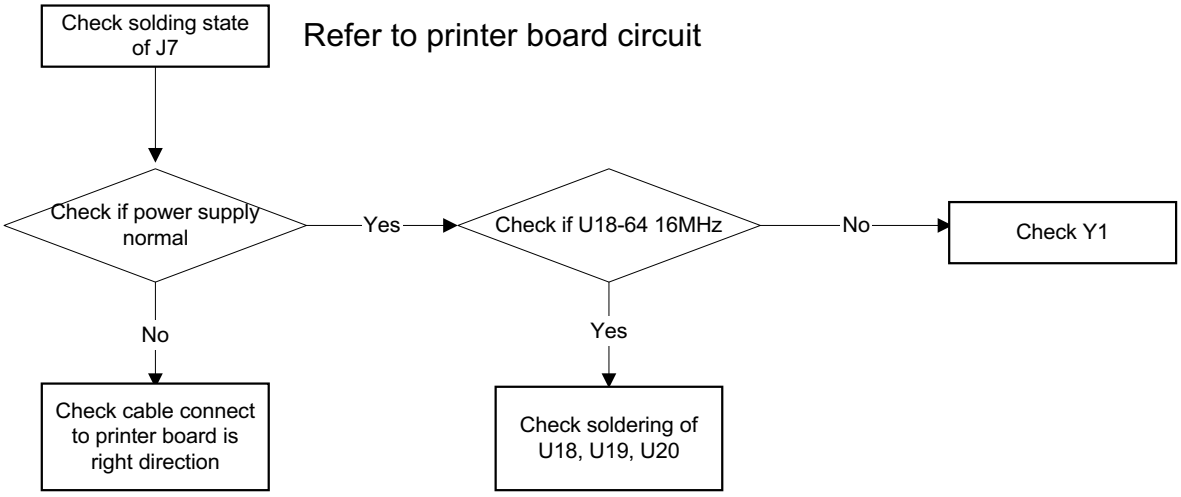
7.1.18 All White Printing



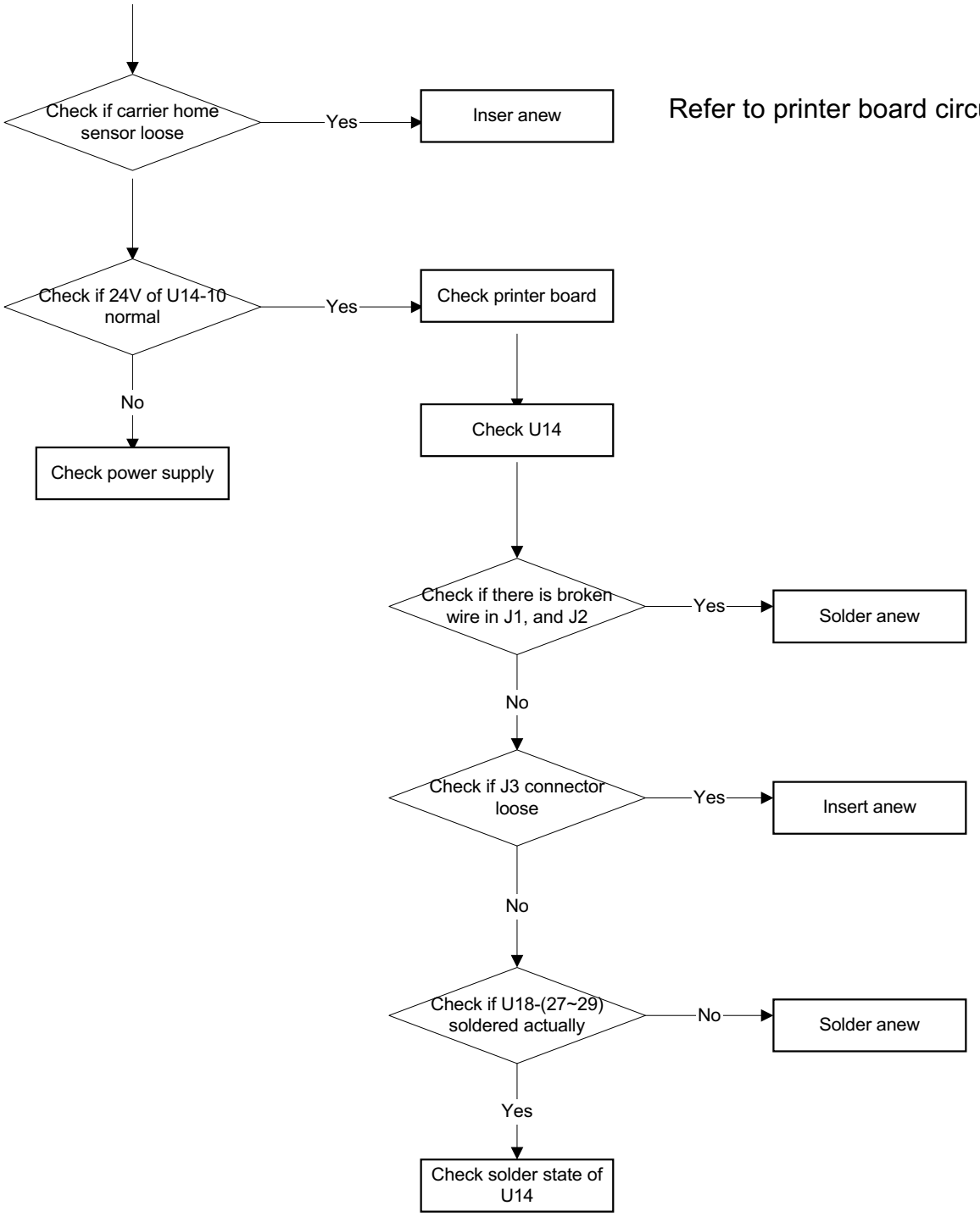
7.1.19 Printing or Copying Error Data



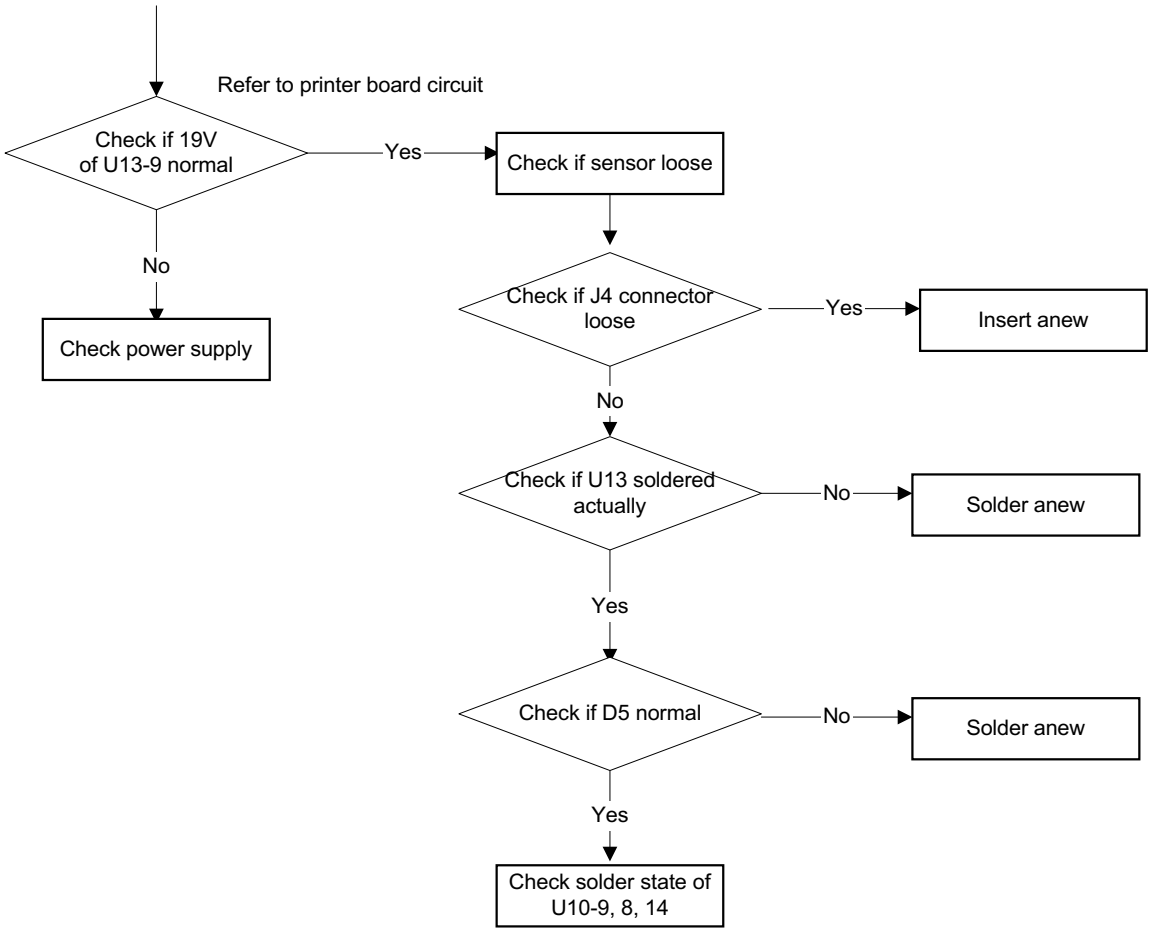
7.1.20 Printer Can't Initial



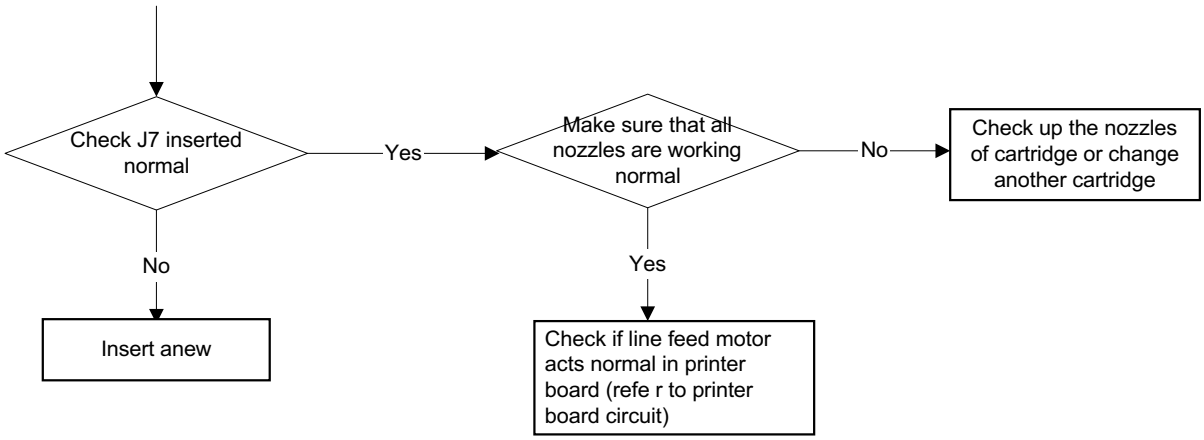
7.1.21 Carriage Motor Remains Motionless



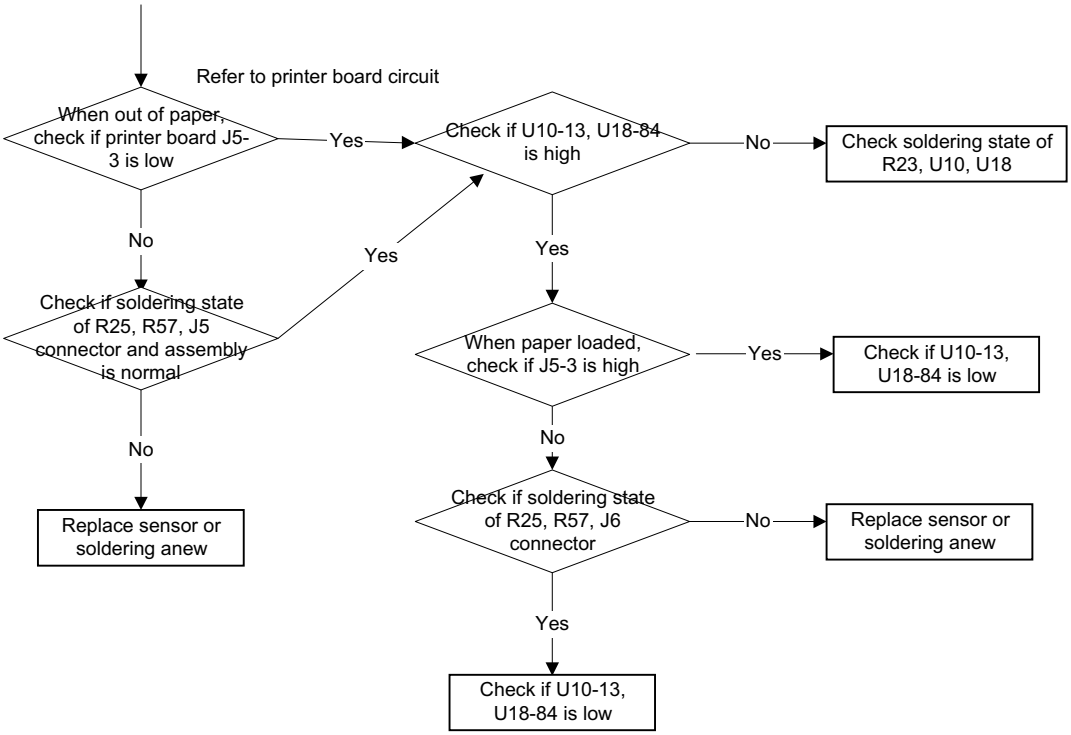
7.1.22 Line Feed Motor Remains Motionless



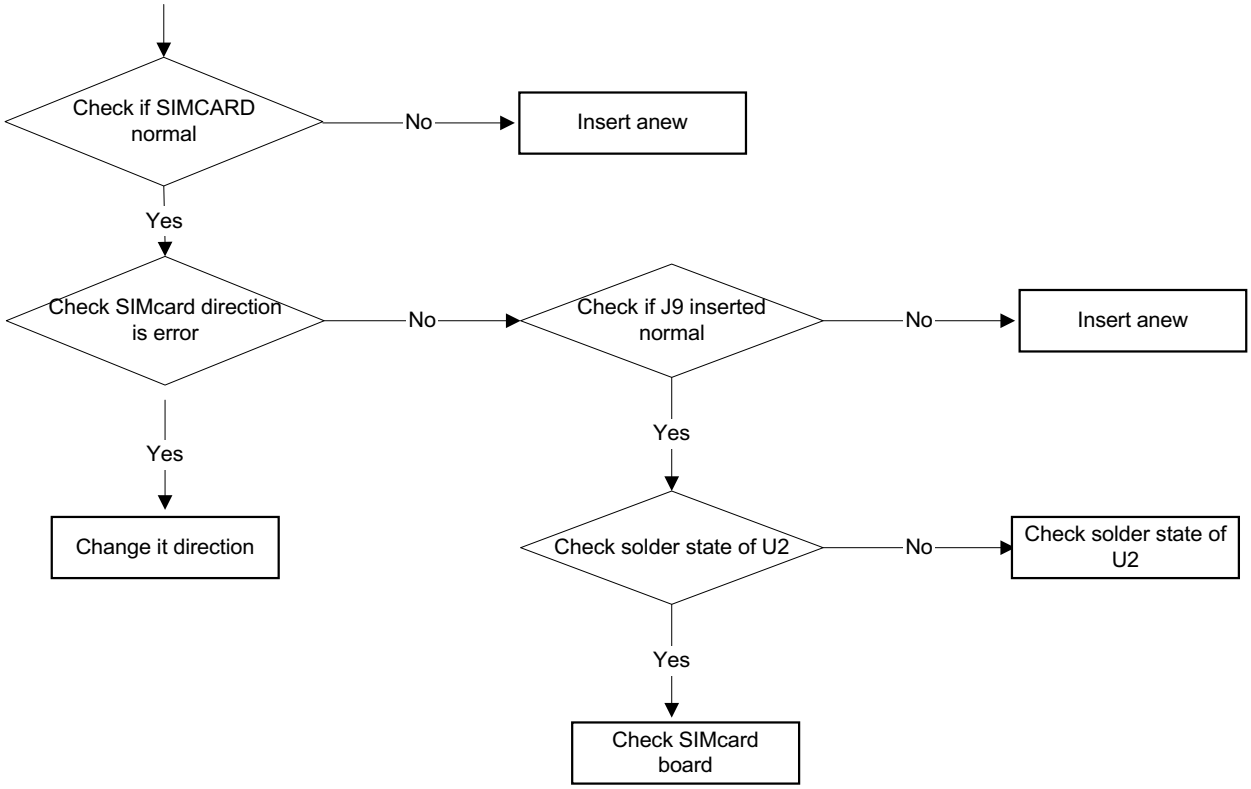
7.1.23 Printing with Line Lost


Check J7 inserted normal
Yes
Make sure that all nozzles are working normal
No
Check up the nozzles of cartridge or change another cartridge
No
Insert anew
Yes
Check if line feed motor acts normal in printer board (refe r to printer board circuit)

7.1.24 Failed to Detect Paper Jam Sensor

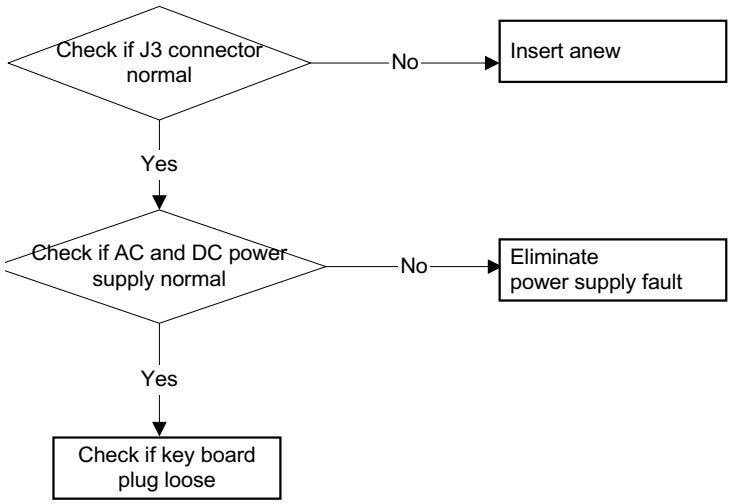

Refer to printer board circuit
When out of paper, check if printer board J5-3 is low
Yes
Check if U10-13, U18-84 is high
No
Check soldering state of R23, U10, U18
No
Yes
Yes
Check if soldering state of R25, R57, J5 connector and assembly is normal
When paper loaded, check if J5-3 is high
Yes
Check if U10-13, U18-84 is low
No
No
Check if soldering state of R25, R57, J6 connector
No
Replace sensor or soldering anew
Replace sensor or soldering anew
Yes
Check if U10-13, U18-84 is low

7.1.25 SIM CARD Invalid

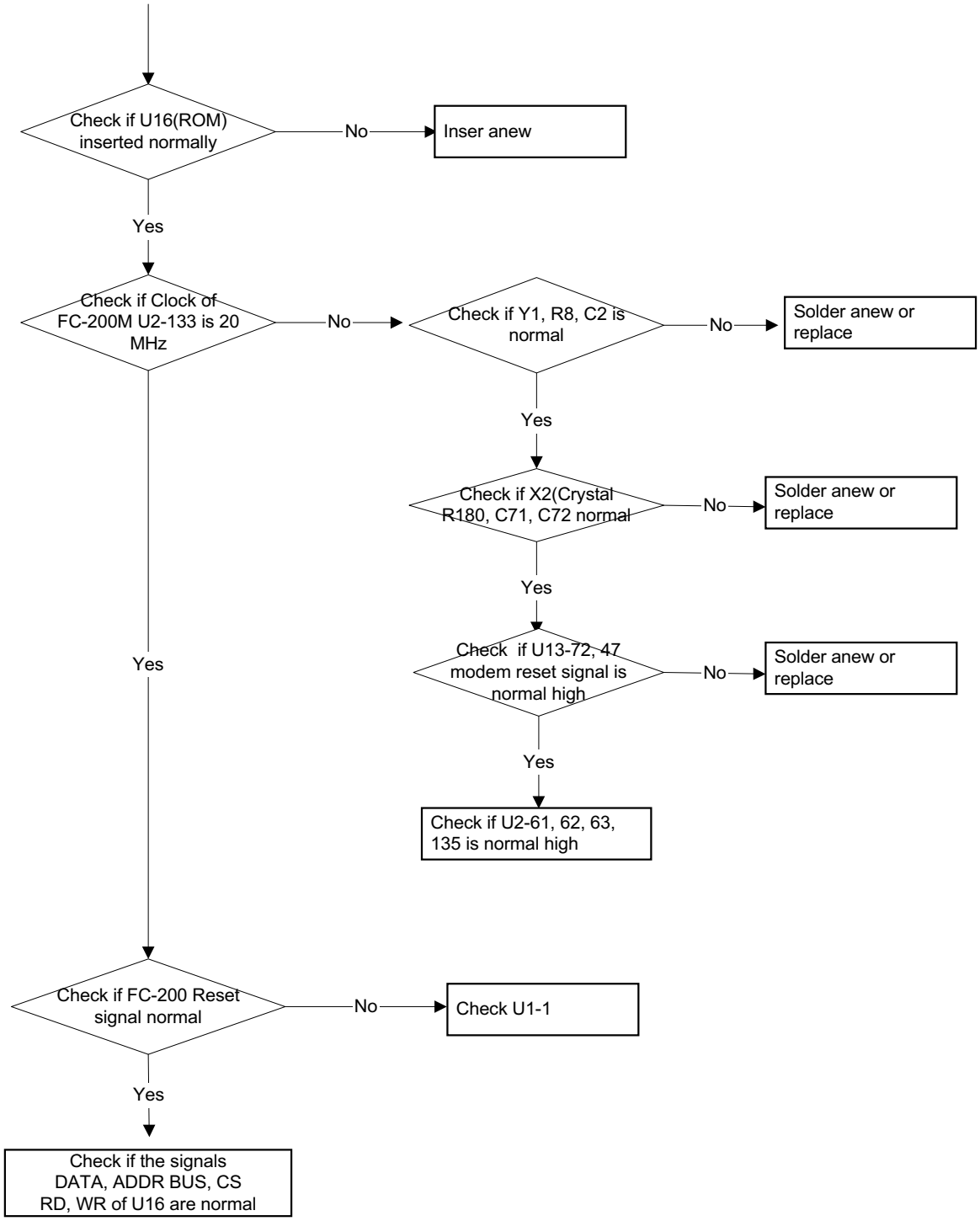


7.2 TF-300PT (Vienna 2)

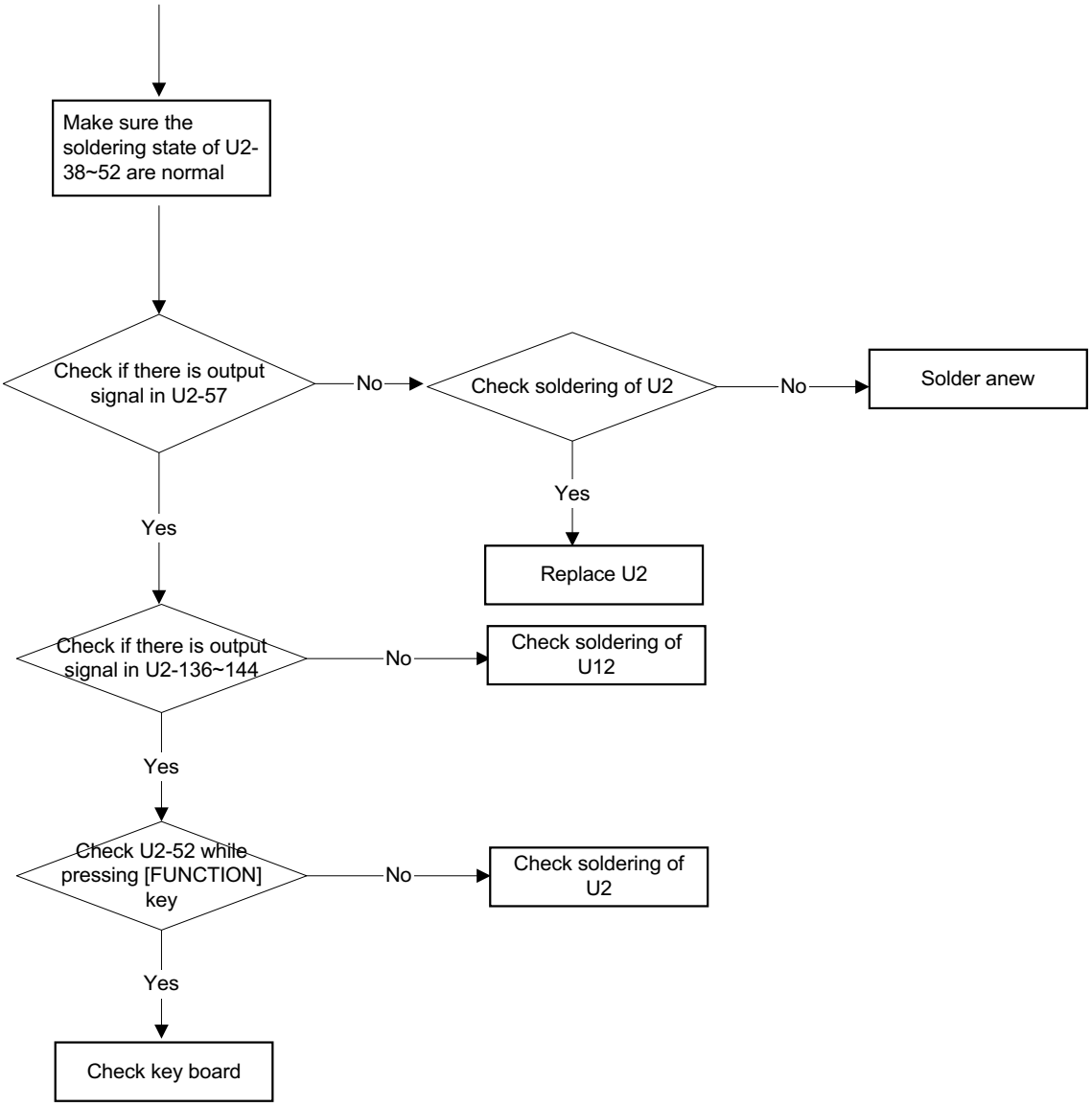
7.2.1 LCD Fails to Display after Power On



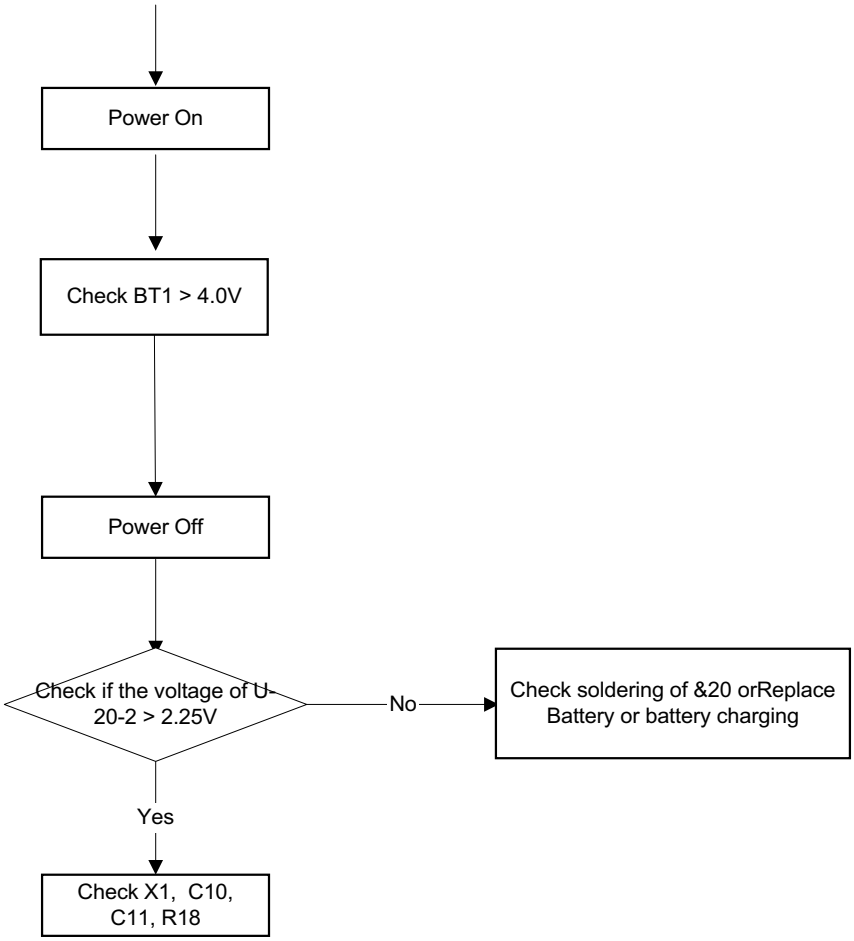
7.2.2 Half of LCD Display Full Black after Power On



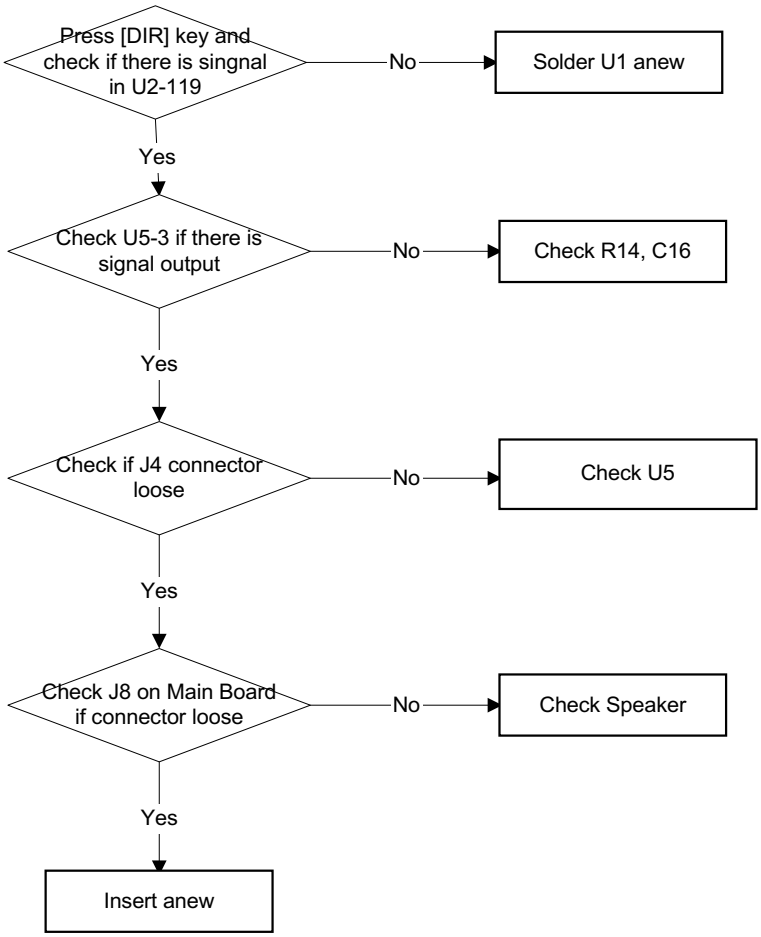
7.2.3 LCD Display Normal on Starting but Key Failed



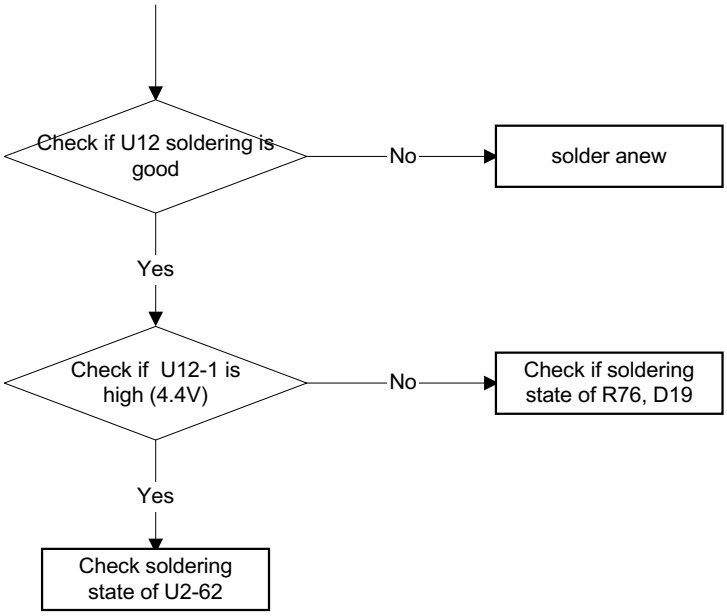
7.2.4 Time Display Abnormal


Power On
Check BT1 > 4.0V
Power Off
Check if the voltage of U-20-2 > 2.25V
No
Check soldering of &20 orReplace Battery or battery charging
Yes
Check X1, C10, C11, R18

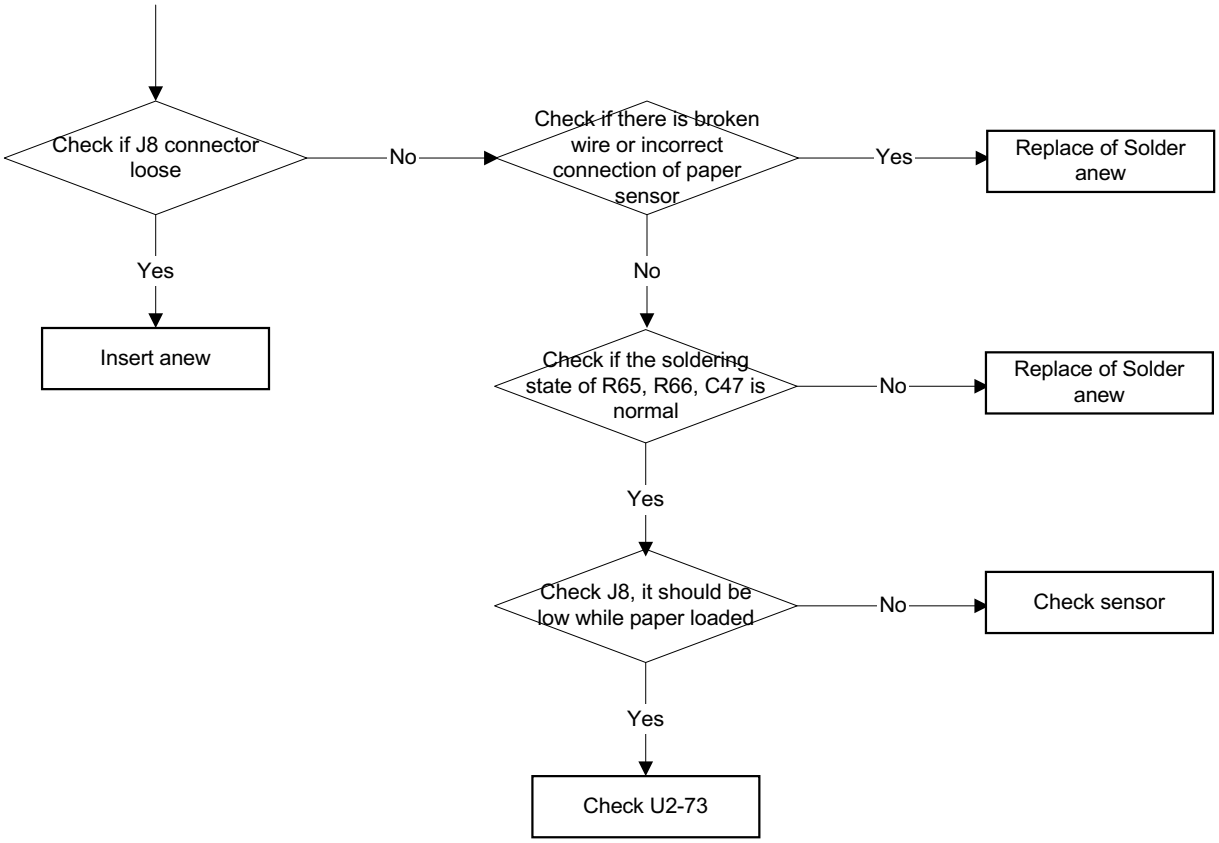
7.2.5 It Works Pressing Key but Speaker Remains Mute



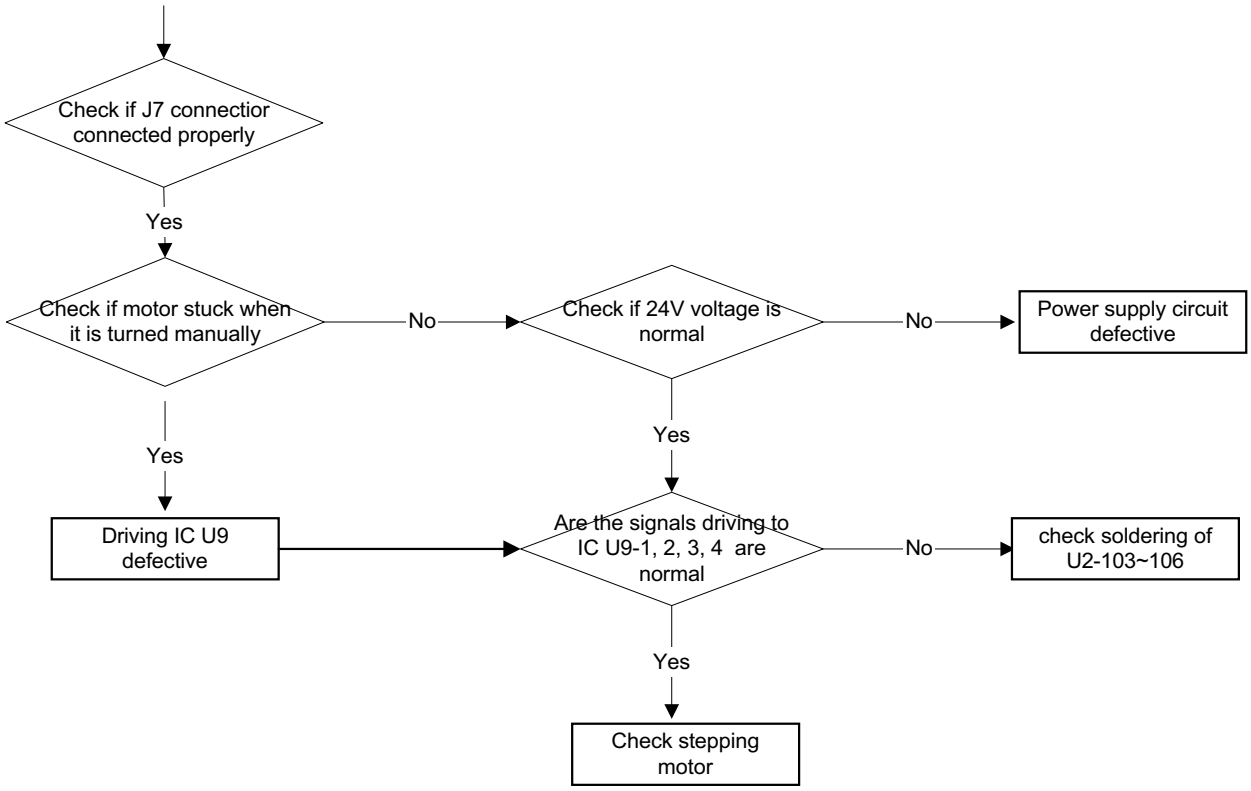
7.2.6 Reset on Starting



7.2.7 LCD Display "NO PAPER" while Recording Paper is Loaded

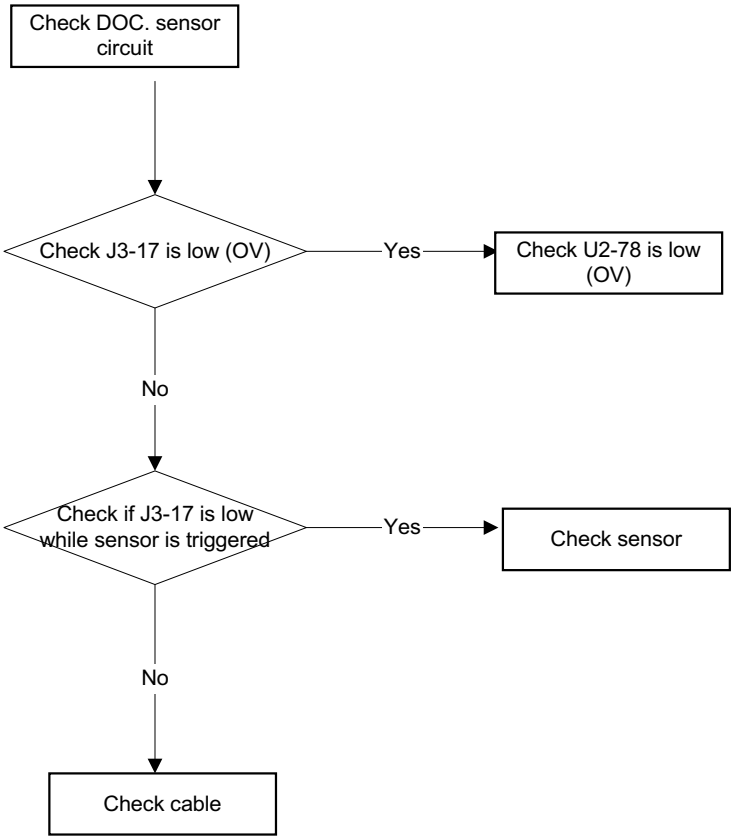


7.2.8 C.I.S. Motor Remains Motionless

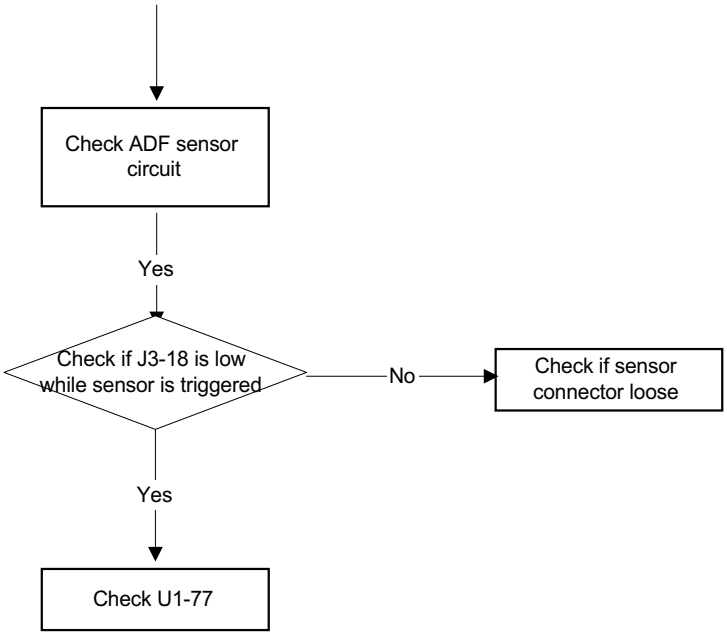


Note: While the motor is revolving, the signals of the pins of driving IC is 100Hz or 200Hz.

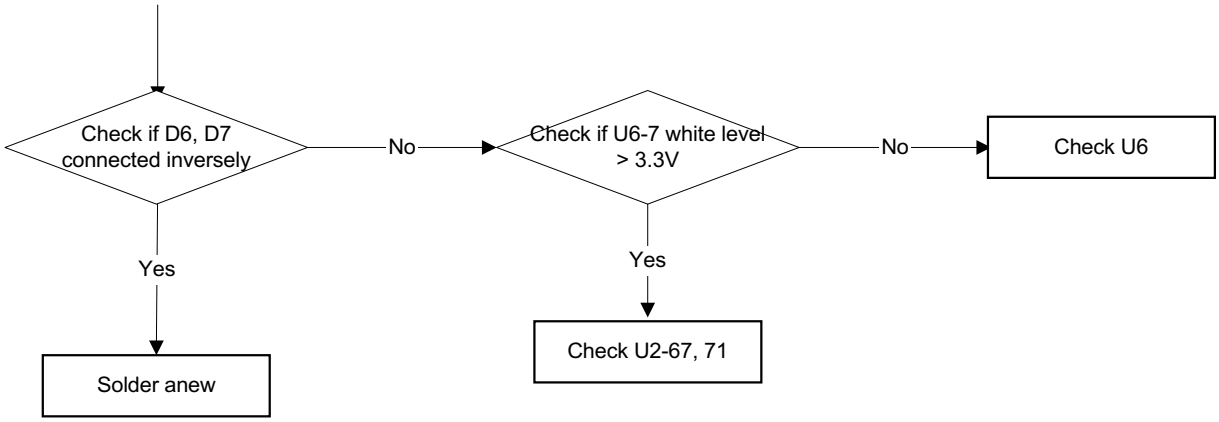
7.2.9 Failed to Feed Document



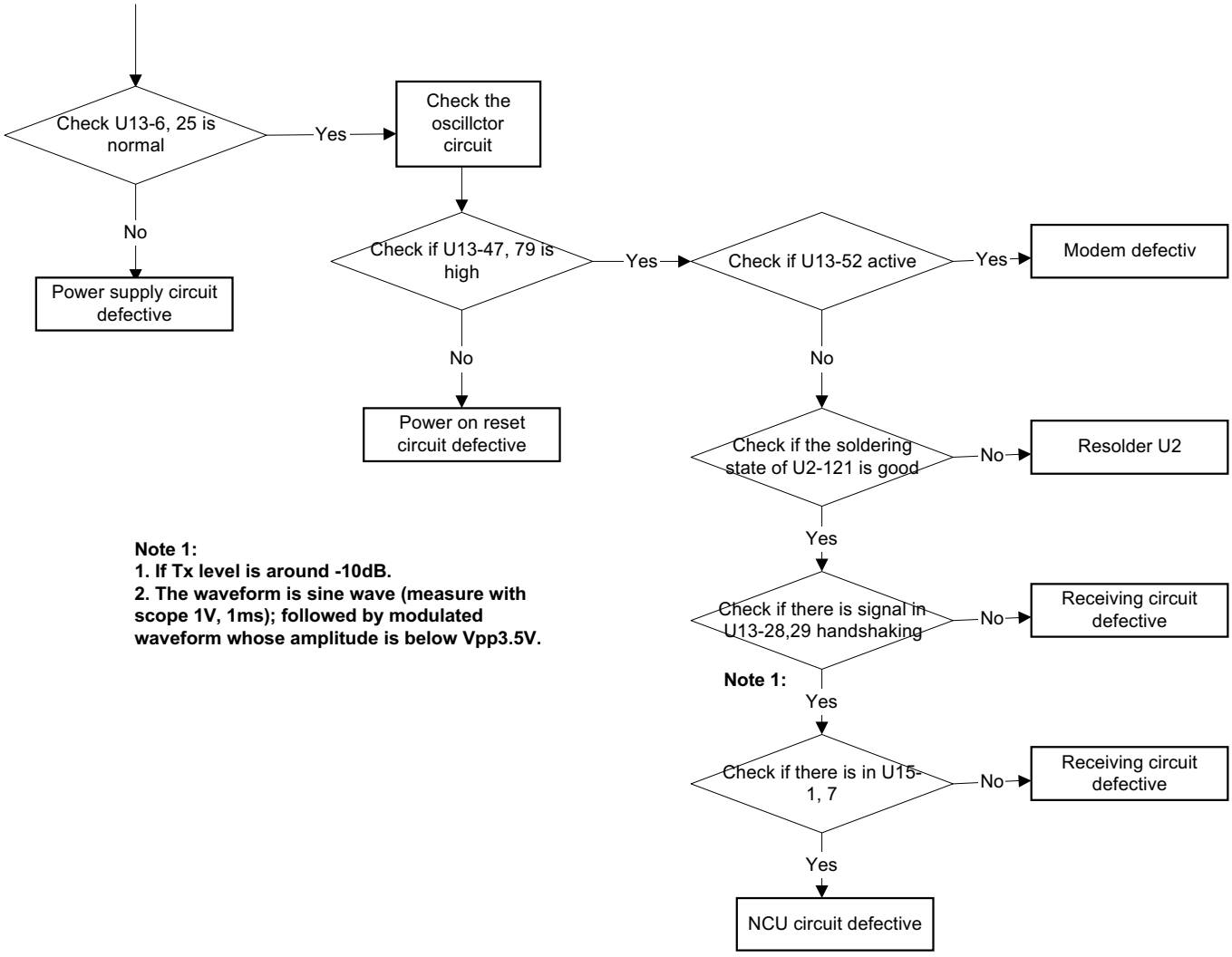
7.2.10 Over Feeding Document until "DOCUMENT JAM"



7.2.11 Copy Quality is Too Light

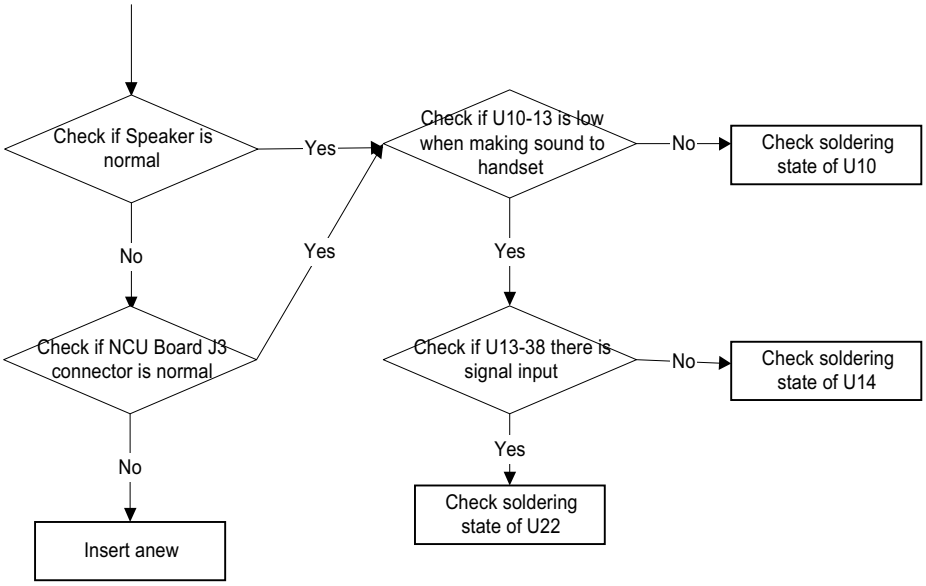


7.2.12 Failed to Transmit Successfully

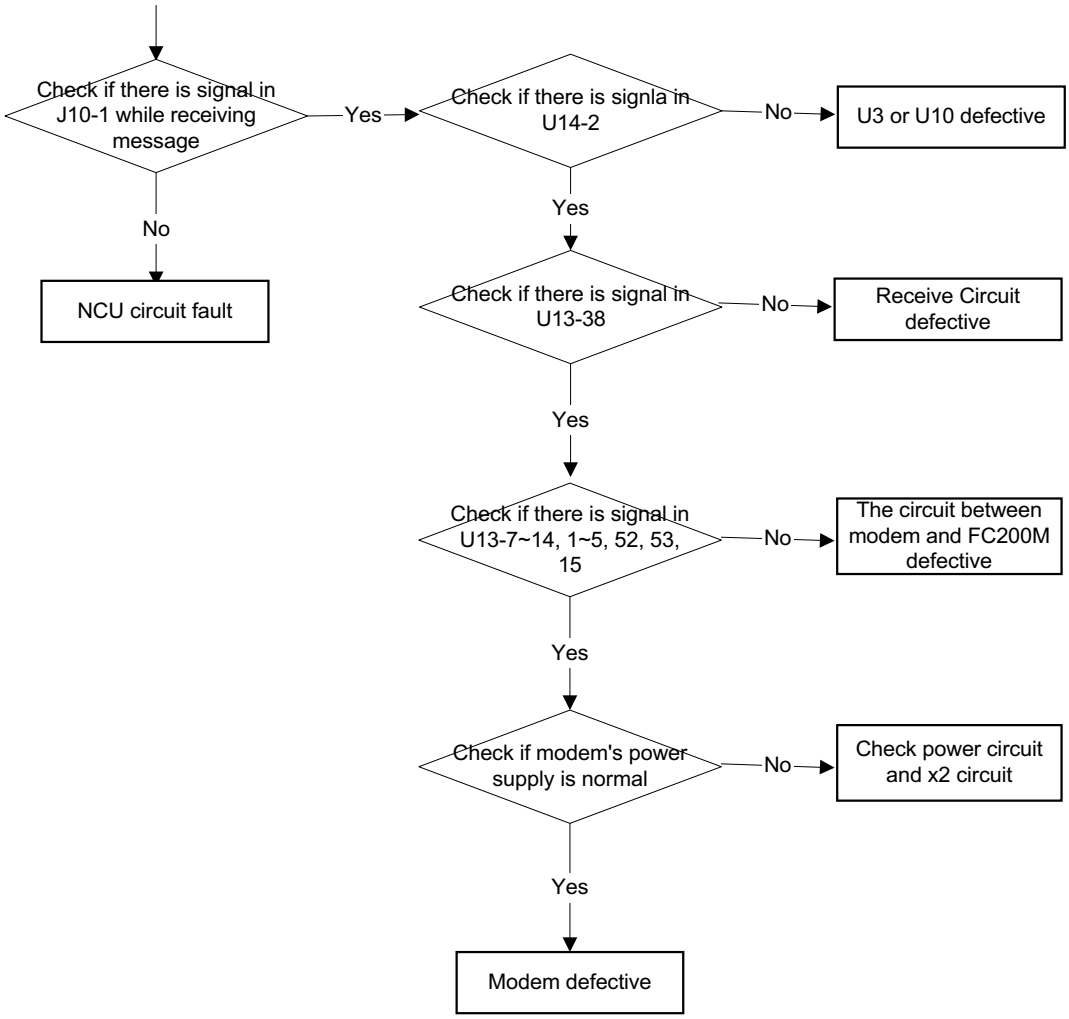


Note 1:
1. If Tx level is around -10dB.
2. The waveform is sine wave (measure with scope 1V, 1ms); followed by modulated waveform whose amplitude is below Vpp3.5V.

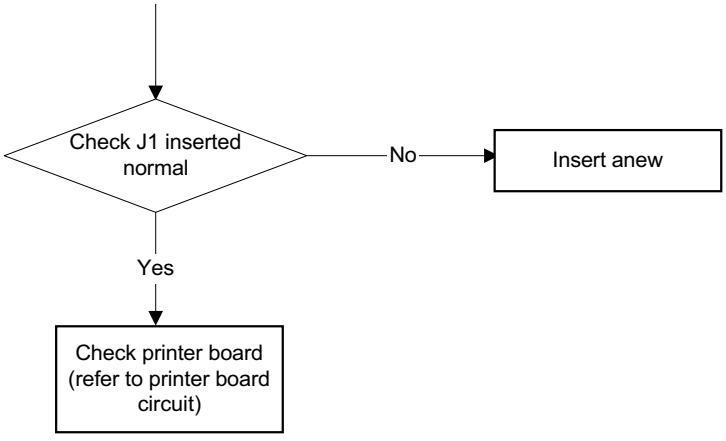
7.2.13 Failed to Record a Message



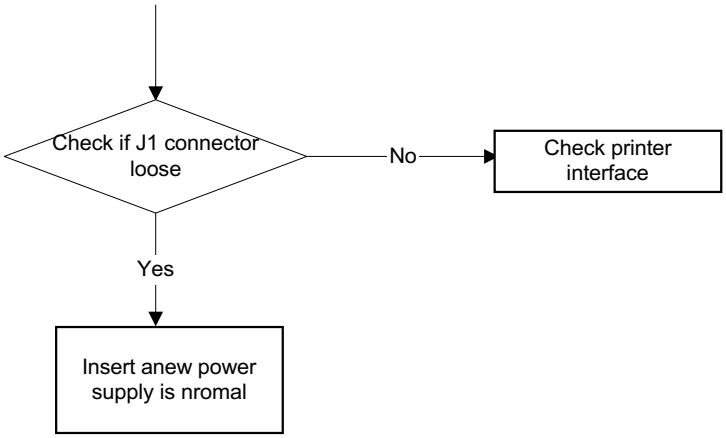
7.2.14 Failed to Receive Successfully



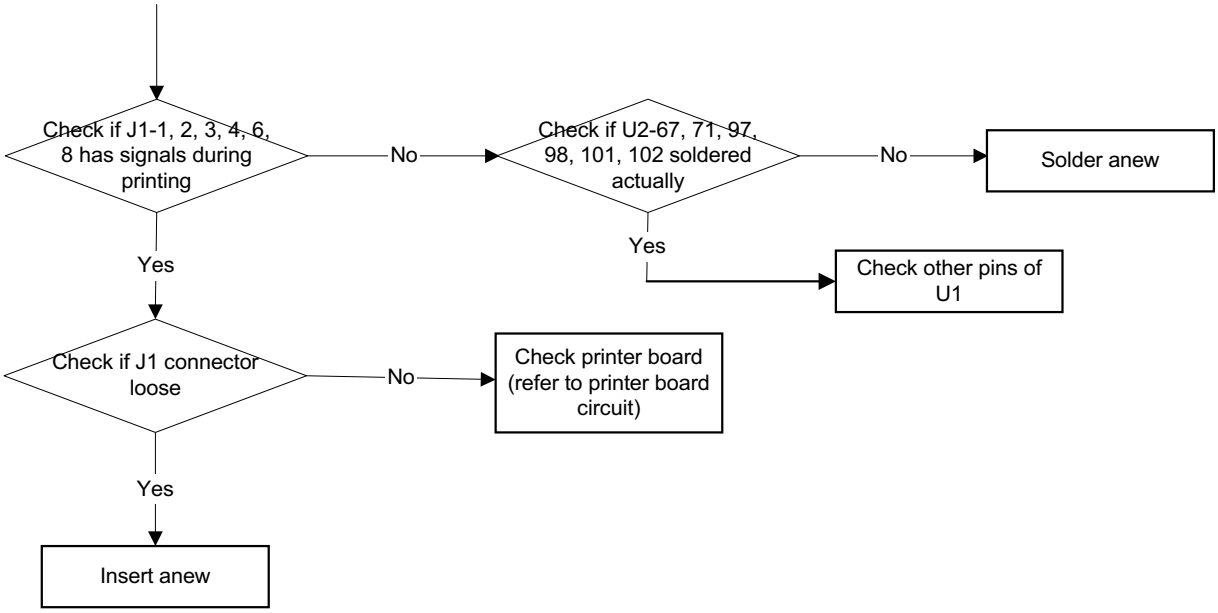
7.2.15 Printer Engine Off



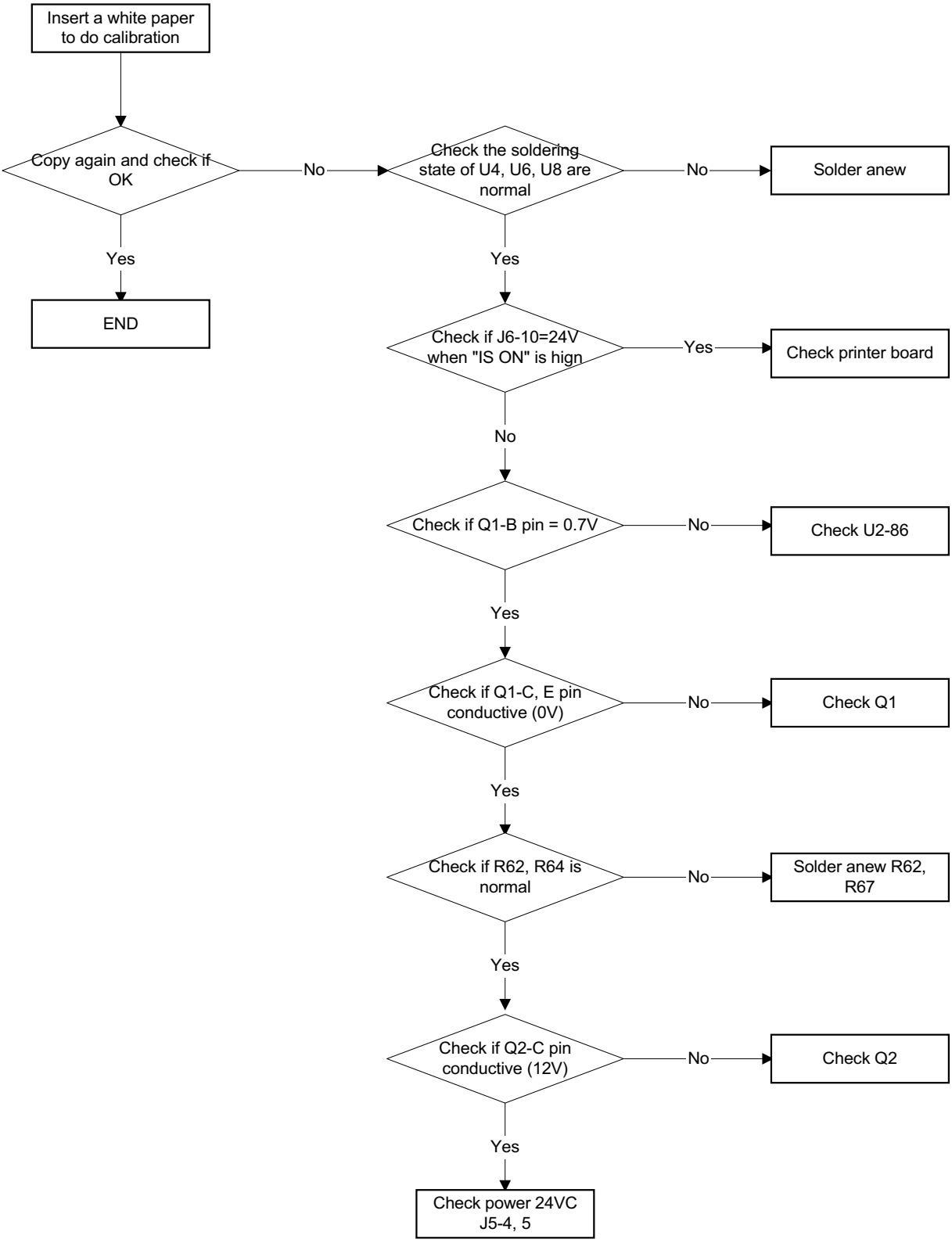
7.2.16 Printer Acts Failed



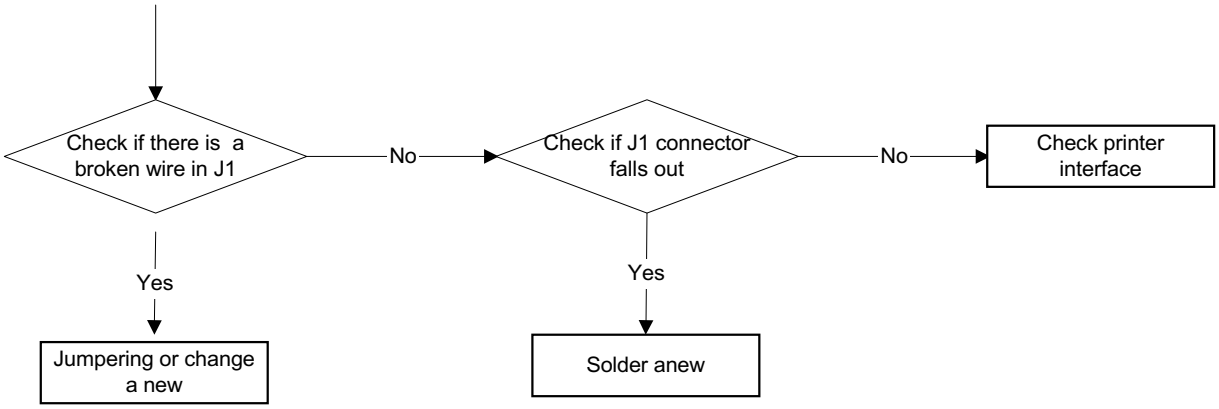
7.2.17 Certain Blocks Failed in Printing



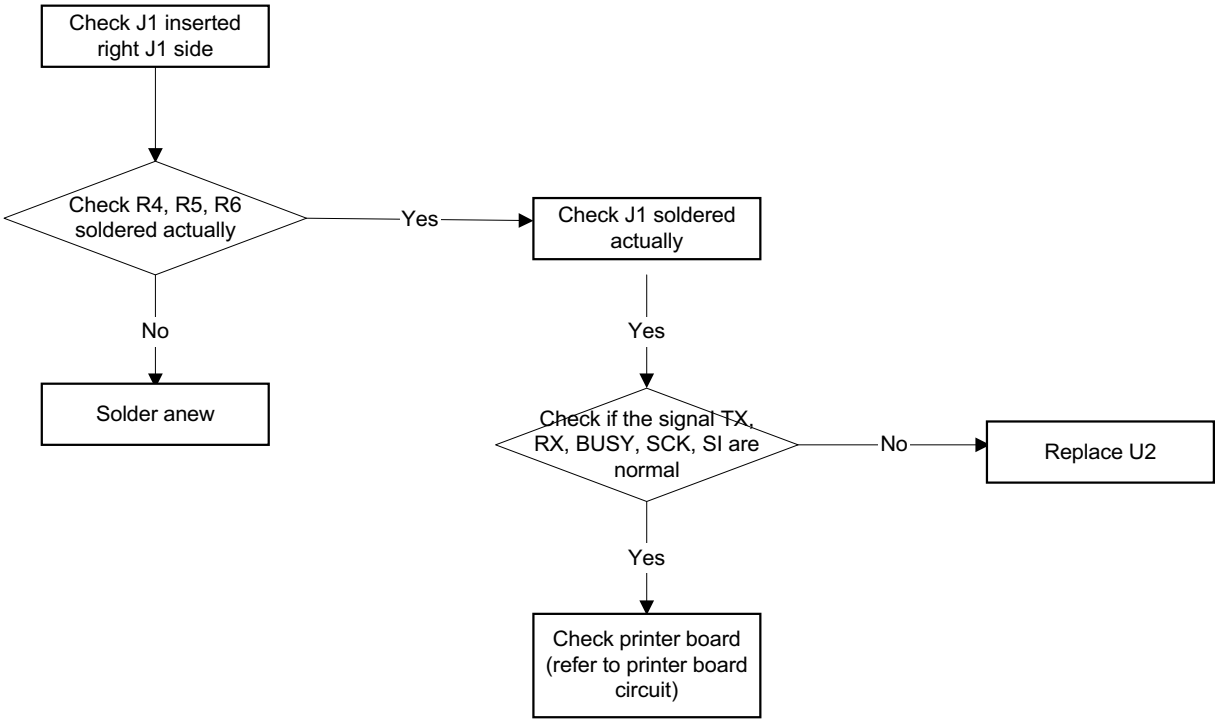
7.2.18 Copy All Black



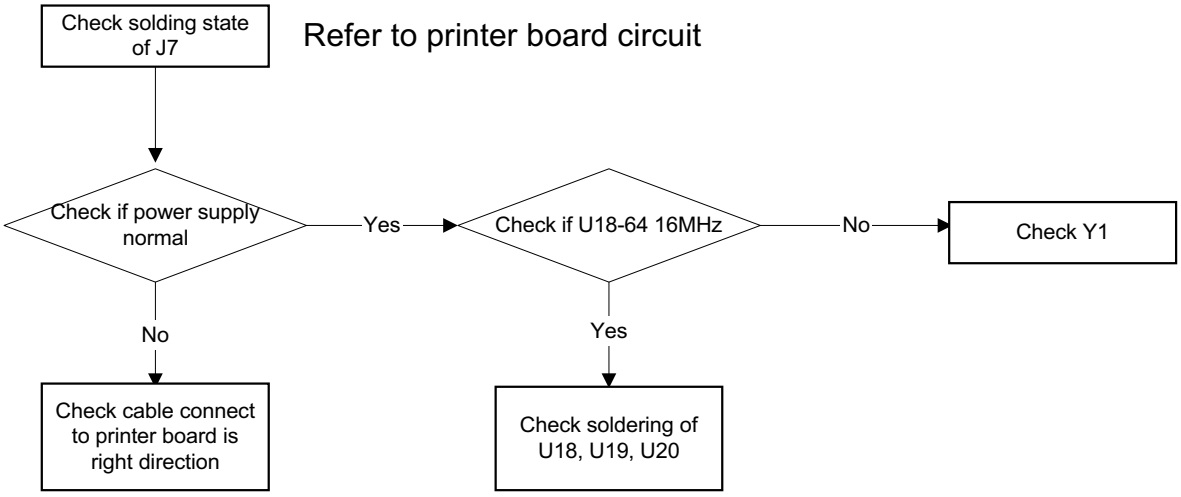
7.2.19 All White Printing



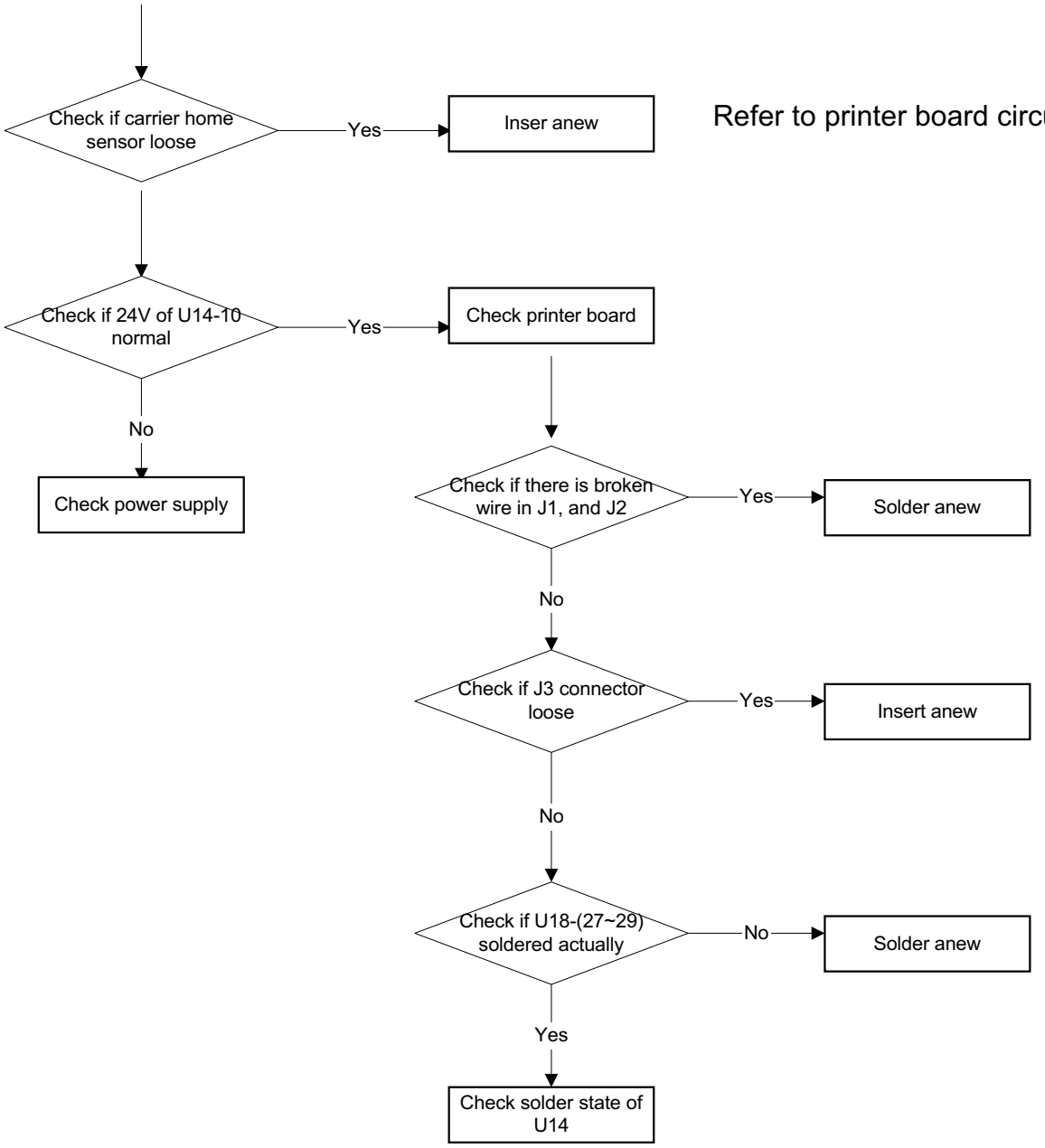
7.2.20 Printing or Copying Error Data



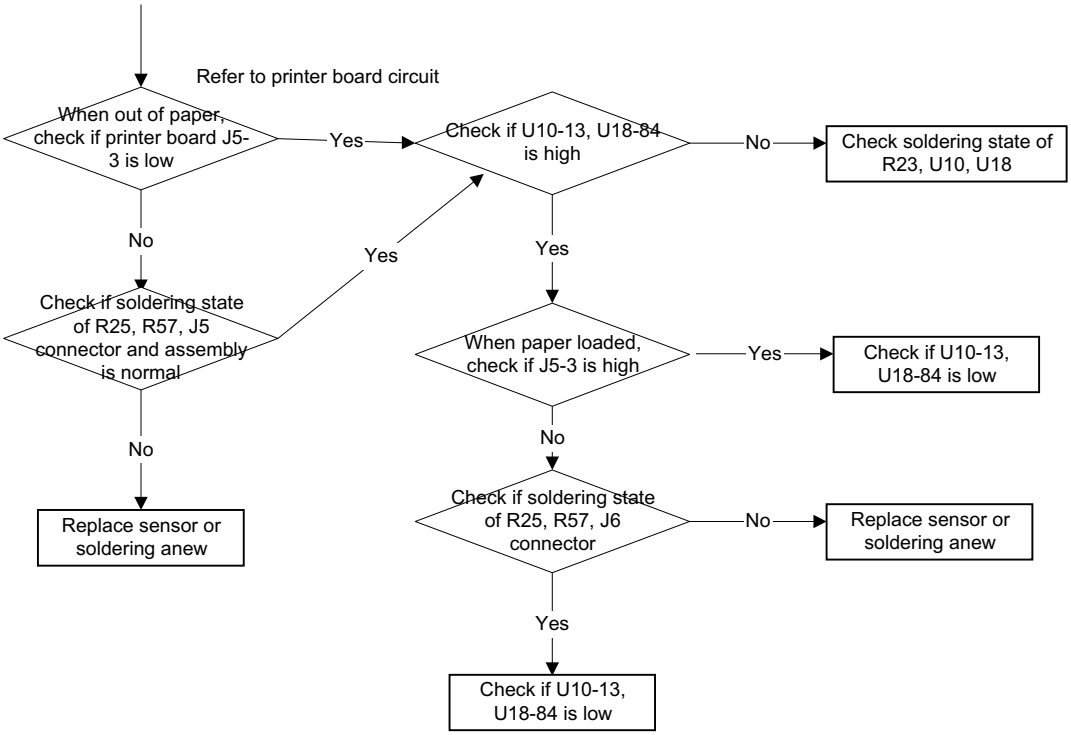
7.2.21 Printer Can't Initial



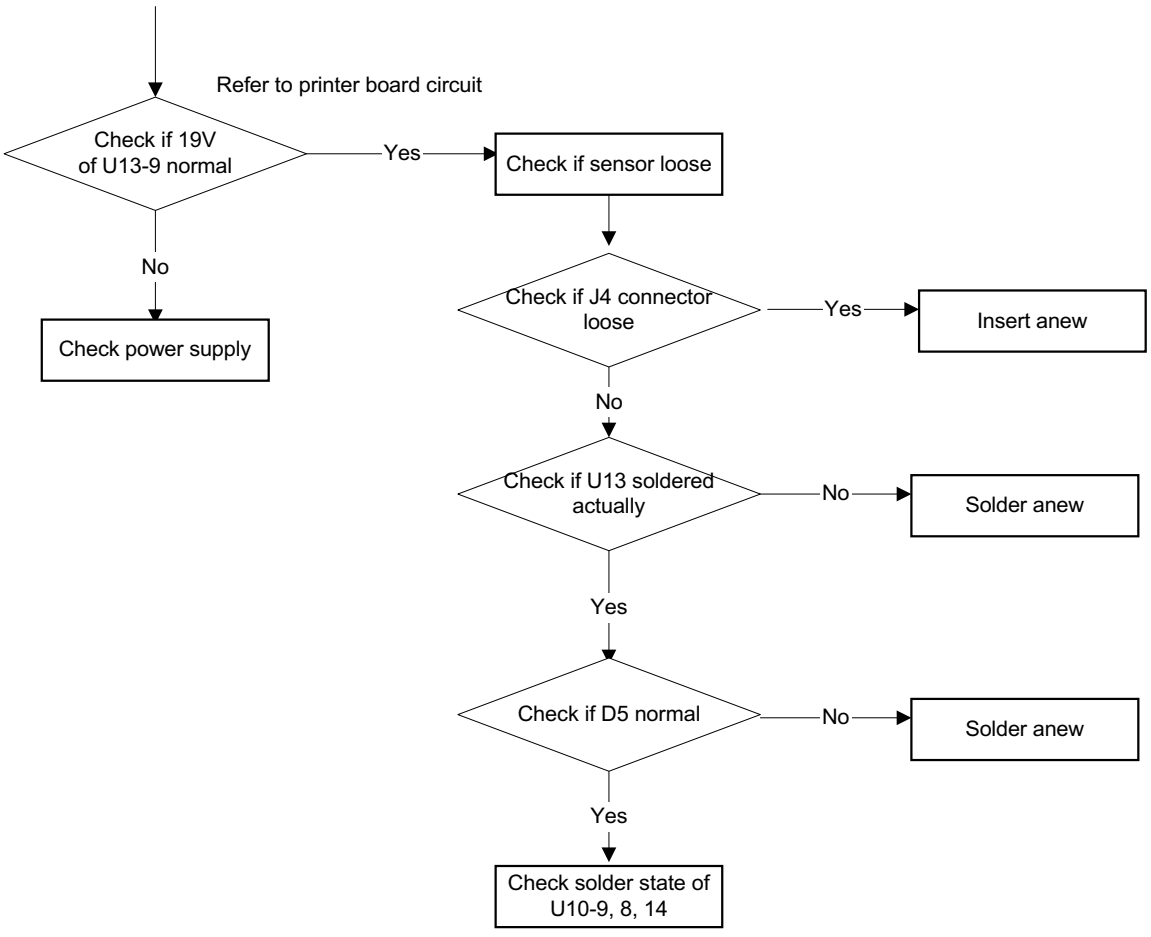
7.2.22 Carriage Motor Remains Motionless



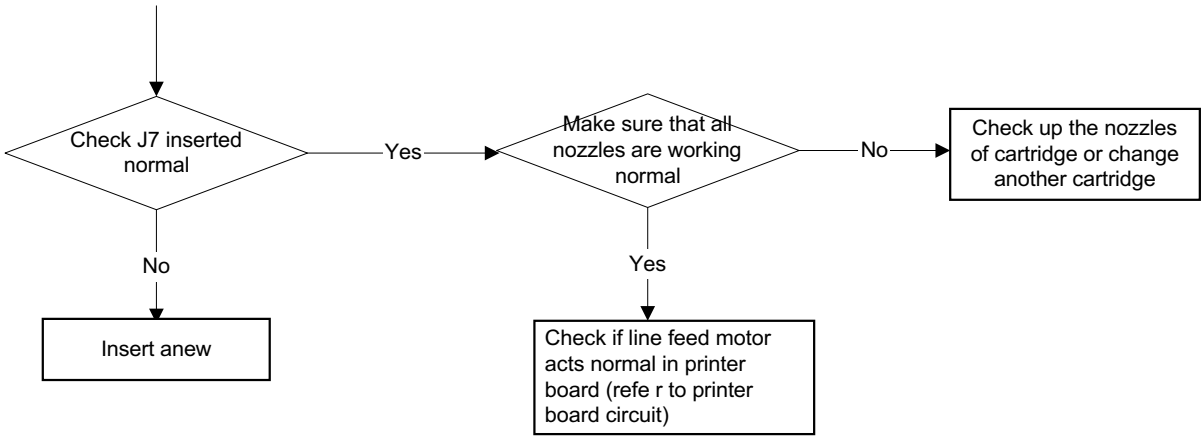
7.2.23 Failed to Detect Paper Jam Sensor


Refer to printer board circuit
When out of paper, check if printer board J5-3 is low
Yes
Check if U10-13, U18-84 is high
No
Check soldering state of R23, U10, U18
No
Yes
Yes
Check if soldering state of R25, R57, J5 connector and assembly is normal
When paper loaded, check if J5-3 is high
Yes
Check if U10-13, U18-84 is low
No
No
Check if soldering state of R25, R57, J6 connector
No
Replace sensor or soldering anew
Replace sensor or soldering anew
Yes
Check if U10-13, U18-84 is low

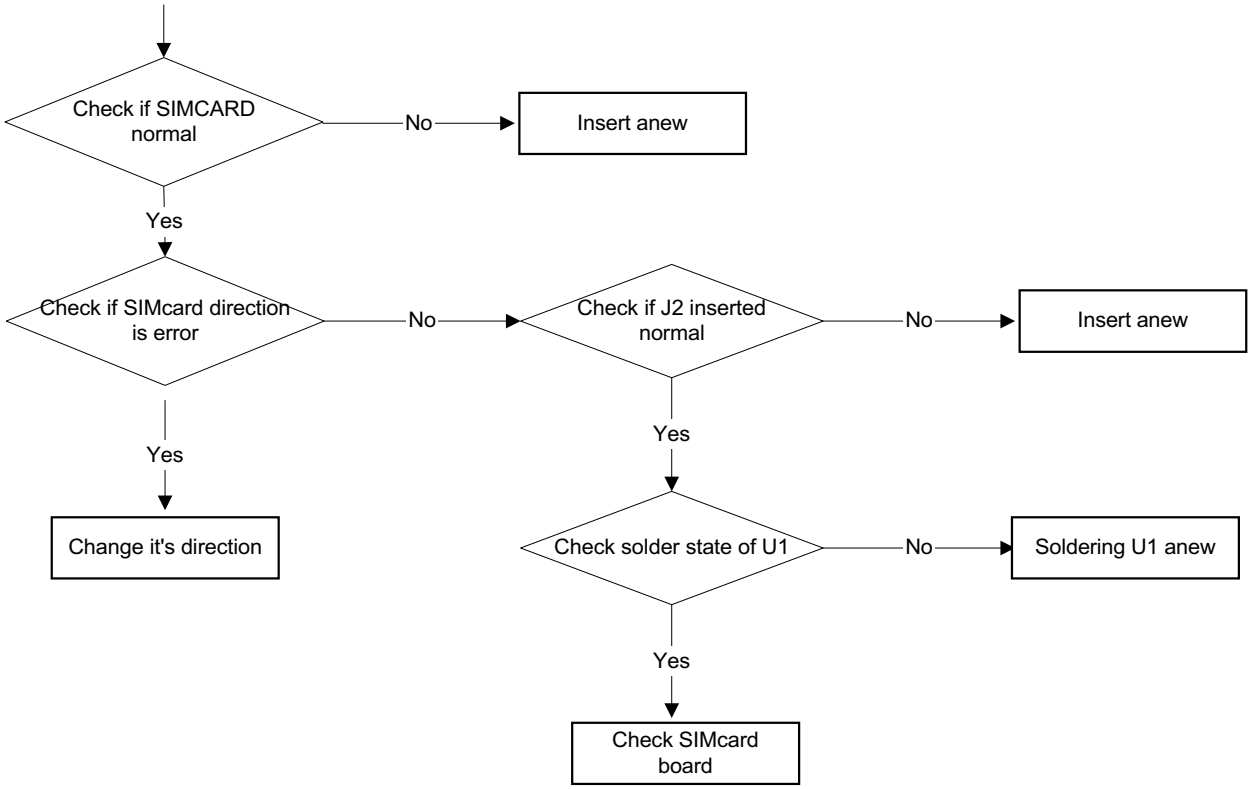
7.2.24 Line Feed Motor Remains Motionless



7.2.25 Printing with Line Lost


Check J7 inserted normal
Yes
Make sure that all nozzles are working normal
No
Check up the nozzles of cartridge or change another cartridge
No
Insert anew
Yes
Check if line feed motor acts normal in printer board (refe r to printer board circuit)

7.2.26 SIM CARD Invalid



7.3 Trouble Shooting Fax Mechanical Problem

PROBLEM	CAUSE	ACTION
DOC. SKEW	1. DOCUMENT WITHOUT USING GUIDES.	1. ADVISE THE OPERATOR TO LOAD DOCUMENT WITH DOCUMENT GUIDE.
	2. ADF ROLLER ASM IS LOCKED	2. REPLACE CLUTCH SPRING
	3. I.S. DEFORMED, I.S.'S SURFACE IS CURVED.	3. I.S. DEFORMED, I.S.'S SURFACE IS CURVED.
	4. UNEVEN I.S. FORCE.	4. REPLACE R & L I.S. HINGE.
	5. DOC. TOO THIN OR TOO CURL.	5. USE CARRIER SHEET OR FIRST DUPLICATE FROM COPY MACHINE.
IMAGE ELONGATION	1. A.D.F. ROLLER IS LOCKED.	1. REPLACE CLUTCH SPRING.
	2. I.S. PRESSURE IS NOT ENOUGH OR NON-UNIFORM.	2. .ADJUST I.S. HINGE OR REPLACE NEW ONE.
	3. I.S. PLATEN IS STAINED.	3. CLEAN I.S PLATEN.
	4. I.S. ROLLER'S SPRING IS FATIGUED	4. REPLACE NEW ONE.
DOCUMENT DOUBLE FEED	1. DOCUMENT TOO THICK OR TOO THIN, MIXED DOCUMENT	1. LOAD CORRECT DOCUMENT.
	2. A.D.F. SEPERATION RUBBER SHEET IS ABRADED.	2. REPALCE NEW SEPERATION RUBBER SHEET.
	3. A.D.F CLAMPING PLATE OR ADF. SPRING IS FATIGUED.	3. CHANGE NEW ONE.
DOCUMENT JAM	1. A.D.F SENSOR FALLEN OR FAILED.	1. SNAP-IN FIT A.D.F SENSOR AGAIN OR REPLACE NEW ONE.
	2. A.D.F ROLLER STAINED.	2. CLEAN OR REPLACE A.D.F ROLLER
	3. DOC. SENSOR FIT NO GOOD.	3. SNAP-IN FIT DOC. SENSOR CORRECTLY.
	4. ADF CLUTCH SPRING IS FATIGUED.	4. REPLACE ADF CLUTCH SPRING.
HIGH BACKGROUND OR ALL BLACK COPY	1. INCONTRAST	1. SYSTEM INITIAL AGAIN.
	2. STAINED I.S. GLASS.	2. LEAN I.S. GLASS.
	3. I.S. CONNECTOR LOOSEN OR I.S. FAILED	3. PLUG IN I.S. CONNECTOR OR REPLACE I.S.
DOC. NO FEED	1. DEFECTIVE DOCUMENT SENSOR MALFUNCTION.	1. REPLACE DOC. SENSOR.
	2. A.D.F ROLLER IS LOCKED.	2. REPLACE A.D.F. CLUTCH SPRING.
	3. DEFECTIVE SCANNER MOTOR.	3. REPLACE SCANNER MOTOR.
	4. CLAMPING PLATE DEFORMATED	4. REPLACE CLAMPING PLATE
PAPER NO FEED OR PAPER JAM	1. PAPER SENSOR FAILED	1. REPLACE PAPER SENSOR
	2. TOO MUCH PAPER IN THE PAPER FEEDER.	2. REPLACE THE CORRECT PAPER.
	3. PAPER FEED GEAR DO NOT TURN.	3. REPLACE THE MOTOR OR DRIVE TRAIN ASM.

PROBLEM	CAUSE	ACTION
	4. THE PICK ROLLER FOR WEAR.	4. REPLACE AUTO PAPER FEEDER (A.P.F UNIT).
	5. PAPER PATH FOR OBSTRUCTIONS.	5. CLEAR THE PAPER PATH.
	6. PRINTER BOARD FAILED.	6. REPLACE PRINTER BOARD.
	7. MYLAR-A.P.F DEFORMED	7. REPLACE MYLAAR-A.P.F.
	8. IDLE ROLLER IS LOCKED OR FALLEN ON PAPER GUIDE-BASE	8. IS IDLE LOCAL ON THE RIGHT PLACE ON PAPER GUIDE-BASE
PAPER SKEW	1. THE PAPER PATH FOR OBSTRUCTIONS.	1. CLEAR THE PAPER PATH.
	2. BUCKLE CORNER IS LOCKED OR HAVE BURR.	2. CHECK SPRING-BUCKLE CORNER OR REPLACE BUCKLE CORNER.
	3. SPRING-KNOCK UP FATIGUED	3. REPLACE SPRING-KNOCK UP.
	4. PICK UP ROLLER IS FAILED.	4. REPLACE PICK UP ROLLER.
	5. PAPER GUIDE A.P.F IS FAILED	5. REPLACE PAPER GUIDE A.P.F.
	6. A.P.F. SENSOR ARM FOR BINDS OR DAMAGE.	6. REPLACE THE SMALL FEED ROLL BRACKET ASM.
CARRIAGE DOESN'T MOVE OR SLAMS SIDE FRAME	1. THE CARRIAGE MOTOR BIND OR PULLEY LOOSE.	1. REPLACE THE CARRIAGE MOTOR.
	2. CARRIAGE GUIDE ROD IS STAINED.	2. CLEAN AND LUBRICATE THE GUIDE ROD.
	3. CARRIAGE TRANSPORT BELT TO BE WORN OR LOOSE.	3. REPLACE THE CARRIAGE BELT.
	4. CARRIAGE ASM WITH BROKEN PARTS.	4. REPLACE CARRIAGE ASM.
PRINT LINE CROWDED, INK SMEARING OR VERTICAL STREAKS ON PAPER	1. PAPER PATH FOR OBSTRUCTIONS.	1. CLEAN PAPER PATH.
	2. WHEEL-SUPPORT ASM. CROWDED, INK SMEARING ON PAPER.	2. IS STAR WHEEL ROTATE FREELY OR STAR WHEEL DEFORMED.
	3. TOO MUCH PAPER IN THE PAPER FEEDER.	3. PUT INTO THE SPECIFIED QUANITY OF PAPERS.
	4. PAPER IS TOO SMOOTH OR CURLED.	4. INSERT THE CORRECT PAPER.
	5. GEARS FOR WEAR OR BINDS.	5. REPLACE THE PAPER FEED GEARS.
FUZZY PRINT	1. THE SERVICE STATION WIPER IS DAMAGED.	1. REPLACE THE WIPER.
	2. THE PRINTHEAD NOZZLE WAS SEALED WITH TAPE.	2. REMOVE THE TAPE.
	3. THE PRINT CARTRIDGE IS NO GOOD OR WILL BE EXHAUST.	3. REPLACE THE PRINT CARTRIDGE.
HORIZONTAL BREAK LINE	1. ONE OR MORE NOZZLES ARE NOT WORKING.	1. RESEAT THE PRINTHEAD CABLES PROPERLY OR WIPE THE NOZZLES AND CONTACTS WITH A DAMPLY CLEAN CLOTH.
	2. THE CONTACT OF PRINTHEAD CABLE IS DIRT OR WORN.	2. USE CLEAN DRY CLOTH TO CLEAN THE CONTACT OR REPLACE THE PRINT CABLE.

PROBLEM	CAUSE	ACTION
	3. A WORN RUBBER BACKER RESULTS IN POOR CONTACT BETWEEN THE PRINT CABLE AND CARTRIDGE	3. REPLACE THE RUBBER BACKER OR CLEAN THE CARRIAGE CONTACTS.
	4. THE WIPER OR CAP WORN OR LOOSE.	4. REPLACE THE WIPER OR CAP.
	5. THE PARTS OF SERVICE STATION IS WORN OR BROKEN.	5. .REPLACE THE SERVICE STATION ASM.
	6. CARTRIDGE IS NO GOOD	6. REPLACE CARTRIDGE
LIGHT OR BLURRED PRINT	1. THE CARRIAGE BELT OR IDLER PULLEY PARTS ARE WORN, DAMAGED OR LOOSE.	1. REPLACE THE BELT.
	2. THE GUIDE ROD IS WORN OR DIRT.	2. CLEAN THE GUIDE ROD, LUBRICATE WITH NYGEL GREASE.
	3. THE LATCH OR LATCH SPRING OF CARRIAGE ASM. IS WORN OR DAMAGED.	3. REPLACE THE CARRIAGE ASM.
	4. CARRIAGE IS WORN OR DAMAGED.	4. LUBRICATE THE CARRIAGE OR REPLACE THE CARRIAGE.
PAPER MULTI FEED	1. TOO MUCH PAPER IN THE PAPER FEEDER.	1. PUT INTO THE SPECIFIED QUANTITY OF PAPERS.
	2. THE PAPER IS NOT THE CORRECT TYPE.	2. REPLACE THE CORRECT PAPER.
	3. PAPERS WITH TOO MUCH STATICS.	3. REMOVE THE STATICS FROM THE PAPERS.
	4. BUCKLE CORNER BUCKLER IS NOT FULL OPENED.	4. RE-FIT THE BUCKLER'S SPRING OR REPLACE A.P.F UNIT.
INTERMITTENT NOISY	1. CARRIAGE FLAT CABLE IS LOOSENED.	1. RE-FIT THE FLAT CABLE.
	2. THE CABLES IS INTERRUPTED WITH THE GEARS OF PAPER FEED MOTOR.	2. TIED UP THE CABLES AND REMOVE THE CABLES AWAY FROM THE GEARS OF PAPER FEED MOTOR.
LCD DISPLAY "NO PAPER"	1. PAPER SENSOR IS LOOSENED.	1. SNAP FIT THE PAPER SENSOR IN POSITION.
	2. PAPER SENSOR FAILED OR SENSOR ARM FAILED.	2. REPLACE PAPER SENSOR.
	3. MAIN BOARD FAILED.	3. REPLACE MAIN BOARD.
HALF OF LCD IN BLACK	1. EPROM FIT NO GOOD OR FAILED.	1. RE-FIT EPROM OR REPLACE NEW ONE.
	2. DATA DISORDER.	2. SYSTEM INITIAL AGAIN OR DISCHARGE BATTERY.
	3. SRAM OF MAIN BOARD DISORDER.	3. DISCHARGE SRAM AGAIN.
	4. KEY BOARD FAILED.	4. REPLACE KEY BOARD.
	5. MAIN BOARD FAILED.	5. REPLACE MAIN BOARD.
LCD DISPLAYED "NO INK CARTRIDGE"	1. CARTRIDGE DETECT SENSOR MALFUNCTION.	1. POWER RESET.

PROBLEM	CAUSE	ACTION
	2. SYSTEM DATA DISORDER.	2. SYSTEM INITIAL AGAIN.
	3. PRINTER BOARD FAILED.	3. REPLACE PRINTER BOARD.

7.4 NCU/TEL Board Trouble Shooting

7.4.1 Ringing

1. No ringing detection
   → Check the signal output at J4 pin6 (RING DET)
   → Check the status of D8, ZD5, ZD6, C10, R11, R12, PH1.
2. No ringing signal produced
   → Check the signal input at U1 pin21 (FCI)
   → Check the signal output at U1 pin8 (MO)
   → Check the status of C12, ZD7, R16, R17, and C13.
   → Check the status of ZD11, C36, R47, R46, D17
   → Check the wire connections from J8 and J5 to hook board., and R49.

7.4.2 Dialling

1. No dialling
   → Check the wire connections from J7 to keyboard.
   → Check the circuit from J7 to U1 pin13~20.
   → Check the status of S1.
2. DTMF dialling problem
   → Check the status of R40, R41, D15, and D16.
   → Check the status of R1 and C1.
3. Pulse dialling problem
   → Check the signal output at U1 pin 10 (HS/DP)
   → Check the status of R21, R22, R23, R24, Q5, Q6 and Q7.
   → Check the signal output at J4 pin14 (K1_DP)
   → Check the status of K1, K2, C4 and R5.

7.4.3 Handset function

1. Receiving problem
   → Check the status of R36, C28, C29, R34, L9 and L10.
   → Check the receiver inside handset.
2. Speech problem
   → Check the status of C24, C25, C26, R32, R34, L11 and L12.
   → Check the Microphone inside handset.

Appendix

8. PART LIST 8-1

8.1 MAIN BOARD PART LIST 8-1

8.2 KEY BOARD PART LIST 8-4

8.3 PRINT BOARD PART LIST 8-5

8.4 SIMCARD BOARD PART LIST 8-6

8.5 NCU BOARD PART LIST 8-6

8.6 POWER SUPPLY PART LIST 8-31

9. MECHENICAL DRAWING AND PARTS LIST 9-1

10. CIRCUIT DRAWING 10-1

8. PART LIST

8.1 Main Board Part List

P/N:0482325010

P/N:0482325010A (V2)

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
0482300381	INDUCTOR	SBT-0260T	2	L11, 14
0482300577	⊓ TYPE JUMP WIRE	D:0.6/P:5/10/10mm	2	L4, 6
0482302508	CONNECTOR	IL-S-10P-S2T2-EF	1	J3
0482302636	CONNECTOR	06FM-1.0BT	1	J9
0482302784	PIN HEADER	2028P18VU00	1	J7
0482314503	CONNECTOR	B3B-PH-K	1	J10
0482314508	CONNECTOR	B8B-PH-K	1	J1
0482314552	CONNECTOR	B2B-PH-K-B(BLUE)	1	J6
0482325000	M/B P.C.B	TF-300P	1	P.C.B
0482378001	RT PIN	RT-01T.-1.3B	3	TP1~TP3
5193210012	SMD RESISTOR	1/10W, 1K, F, 0805	2	R21, 34
5193210022	SMD RESISTOR	1/10W, 10K, F, 0805	3	R168, 173, 182
5193211832	SMD RESISTOR	1/10W, 118K, F, 0805	1	R178
5193215022	SMD RESISTOR	1/10W, 15K, F, 0805	1	R171
5193216902	SMD RESISTOR	1/10W, 169Ω, F, 0805	1	R189
5193220022	SMD RESISTOR	1/10W, 20K, F, 0805	1	R172
5193227022	SMD RESISTOR	1/10W, 27K, F, 0805	1	R179
5193230012	SMD RESISTOR	1/10W, 3K, F, 0805	2	R20, 176
5193230022	SMD RESISTOR	1/10W, 30K, F, 0805	1	R170
5193239012	SMD RESISTOR	1/10W, 3.9K, F, 0805	1	R32
5193247522	SMD RESISTOR	1/10W, 47.5K, F, 0805	1	R169
5193251002	SMD RESISTOR	1/10W, 510Ω, F, 0805	1	R191
5193286622	SMD RESISTOR	1/10W, 86.6K, F, 0805	3	R174, 175, 177
5195200002	SMD RESISTOR	1/10W, 0Ω, J, 0805	11	R262, 266, 294, 295, 330, 336~340, 343
5195210002	SMD RESISTOR	1/10W, 10Ω, J, 0805	2	R1, 187
5195210102	SMD RESISTOR	1/10W, 100Ω, J, 0805	4	R261, 269, 335, 341
5195210202	SMD RESISTOR	1/10W, 1K, J, 0805	11	R4, 35, 183, 185, 304~310
5195210302	SMD RESISTOR	1/10W, 10K, J, 0805	23	R2, 9, 36, 50, 57, 58, 64, 104~107, 109, 110, 152, 153, 166, 167, 181, 193, 208, 264, 324, 334

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
5195210402	SMD RESISTOR	1/10W, 100K, J, 0805	2	R49, 74
5195210502	SMD RESISTOR	1/10W, 1M, J, 0805	1	R268
5195210602	SMD RESISTOR	1/10W, 10M, J, 0805	1	R8
5195218102	SMD RESISTOR	1/10W, 180Ω, J, 0805	13	R5, 6, 71, 180, 315, 325~329, 331~333
5195220202	SMD RESISTOR	1/10W, 2K, J, 0805	5	R3, 37, 70, 119, 323
5195220302	SMD RESISTOR	1/10W, 20K, J, 0805	2	R316, 322
5195220402	SMD RESISTOR	1/10W, 200K, J, 0805	1	R73
5195222102	SMD RESISTOR	1/10W, 220Ω, J, 0805	2	R19, 22
5195230202	SMD RESISTOR	1/10W, 3K, J, 0805	5	R72, 117, 118, 188, 320
5195251202	SMD RESISTOR	1/10W, 5.1K, J, 0805	5	R209, 263, 267, 314, 321
5195291102	SMD RESISTOR	1/10W, 910 ohm, J, 0805	1	R319
5195300004	SMD RESISTOR	1/8, 0Ω, J, 1206	2	F1, D35
5210201909	SMD TANTALUM CAP	10μF/16V/1815	1	C94
5210207209	SMD TANTALUM CAP	1μF/16V/1206	1	C87
5213322193	ELECTRIC CAP	220μF/16V	2	C14, 107
5213410193	ELECTRIC CAP	100μF/25V	1	C38
5213447093	ELECTRIC CAP	47μF/25V	6	C10, 11, 24, 26, 39, 85
5213510093	ELECTRIC CAP	10μF/35V	1	C29
5285410102	SMT CERAMIC CAP	100pF/50V/J/NPO/0805	1	C17
5285415002	SMT CERAMIC CAP	15pF/50V/J/NPO/0805	1	C113
5285418002	SMT CERAMIC CAP	18pF/50V/J/NPO/0805	1	C98
5285422002	SMT CERAMIC CAP	22pF/50V/J/NPO/0805	2	C6, 7
5288322402	SMT CERAMIC CAP	0.22μF/Y5V/25V/Z/0805	1	C110
5285433002	SMT CERAMIC CAP	33pF/50V/J/NPO/0805	1	C111
5285433102	SMT CERAMIC CAP	330pF/50V/J/NPO/0805	2	C2, 3
5285439002	SMT CERAMIC CAP	39pF/50V/J/NPO/0805	1	C99
5285447102	SMT CERAMIC CAP	470pF/50V/J/NPO/0805	3	C90, 91, 96
5286510202	SMT CERAMIC CAP	X7R/1H/1000pF/0805	2	C108, 112
5286522302	SMT CERAMIC CAP	X7R/0.022μF/50V/0805	1	C102
5286547302	SMT CERAMIC CAP	X7R/0.047μF/50V/0805	1	C116
5288010504	SMT CERAMIC CAP	1μF/16V/Y5V/1C/1206	1	C105
5288610402	SMT CERAMIC CAP	0.1μF/50V/Z/Z5U/0805	37	C1, 4, 5, 8, 9, 15, 16, 18, 19, 23, 25, 34, 64, 66, 68~70, 81~84, 86, 88, 89, 92, 93, 95, 97, 100, 103, 106, 115, 117, 120~123
6500037800	CONNECTOR	3594S08HU00	1	J2
6500037900	CONNECTOR	3594S16HU00	1	J4

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
6502026301	HEADER	5045-02A	1	J8
6502027501	HEADER	5267-06A	1	J5
6550103200	IC SOCKET	32PIN	1	U11
6613576409	SMT SWITCHING DIODE	RLS4148	17	D1, 2, 9, 10, 13, 17, 18, 23~25, 27~32, 34
6615404909	SMT ZENER DIODE	3.6V/0.4W(RLZ3.6B)	1	ZD6
6615413709	SMT ZENER DIODE	5.1V/0.4W(RLZ5.1B)	1	D33
6615414509	SMT ZENER DIODE	5.6V/0.5W(RLZ5.6B)	2	ZD1, 2
6615414909	SMT ZENER DIODE	24V/0.4W(RLZ24B)	1	ZD4
6621005509	TRANSISTOR	2SC2412KR	6	Q1, 15~19
6623000609	TRANSISTOR	2SA1036KR	2	Q2, 11
6640255709	Voltage Detector	XC61BN2412MR	1	U29
6640256000	Voltage Detector	XC61BN4512MR	1	U28
6642001509	Peripheral Driver Arrays IC	TD62003AF	1	U7
6644001909	LINEAR IC	LM386M-1	1	U25
6644002300	LINEAR IC	BA4558F	2	U22, 23
6644200309	LINEAR IC	LF353	1	U3
6644250901	LINEAR IC	LM339M	1	U2
6645005709	DIGITAL MOS IC	BA4066BF	1	U18
6646202019	TTL LOGIC IC	TCS7S66F/TE85L	2	U17, 27
6647106809	IC SRAM 70ns	W24257S-70L/LL (32K x 8bit)	1	U12
6647111200	DRAM IC	M5M44400BJ-7	2	U13, 14
6647404709	FAX ENGIN	R96FE200	1	U1 SET U24
6699002900	CRYSTAL	32.768KHZ	1	X1
6699009400	CRYSTAL	24.00014MHZ	1	X2
6831000700	BEAD CHOKE COIL	K5BRH	2	L1, 13
6990101700	NI-MH BATTERY	4.8V/60mAH	1	BT1

TF-300PT (Vienna 2)

P/N:0482325081

P/N:0482325081A (V1)

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
0482300381	INDUCTOR	SBT-0260T	3	L3, 5, 8
0482302508	CONNECTOR	IL-S-10P-S2T2-EF	1	J6
0482302642	CONNECTOR	1006S06VT0A	1	J2
0482302784	PIN HEADER (18 PIN)	2028P18VU00	1	J3
0482314503	CONNECTOR	B3B-PH-K	1	J8
0482314508	CONNECTOR	B8B-PH-K	1	J1
0482314552	CONNECTOR	B2B-PH-K-E (BLUE)	1	J9
0482325070	MAIN/B PCB	TF-300PT	1	PCB
0482378001	RT PIN	RT-01T-1.3B	3	TP1, 2, 3
5193210012	SMD RESISTOR	1/10W, 1K, F, 0805	1	R57
5193210022	SMD RESISTOR	1/10W, 10K, F, 0805	2	R103, 104
5193210032	SMD RESISTOR	1/10W, 100K, F, 0805	2	R105, 109
5193215022	SMD RESISTOR	1/10W, 15K, F, 0805	2	R33, 112
5193220022	SMD RESISTOR	1/10W, 20K, F, 0805	1	R110
5193230022	SMD RESISTOR	1/10W, 30K, F, 0805	4	R97, 102, 107, 111
5193239012	SMD RESISTOR	1/10W, 3.9K, F, 0805	1	R56
5193247522	SMD RESISTOR	1/10W, 47.5K, F, 0805	2	R88, 148
5193251002	SMD RESISTOR	1/10W, 510 ohm, F, 0805	2	R34, 72
5193266522	SMD RESISTOR	1/10W, 66.5K, F, 0805	2	R101, 106
5195200002	SMD RESISTOR	1/10W, 0 ohm, J, 0805	8	R4~6, 24, 70, 122, 126, 152
5195210002	SMD RESISTOR	1/10W, 10 ohm, J, 0805	3	R9, 45, 84
5195210102	SMD RESISTOR	1/10W, 100 ohm, J, 0805	3	R13, 71, 108
5195210202	SMD RESISTOR	1/10W, 1K, J, 0805	11	R3, 42~44, 49, 58, 59, 63, 85, 147, C84
5195210302	SMD RESISTOR	1/10W, 10K, J, 0805	31	R1, 12, 14, 15, 17, 51, 54, 55, 60~62, 67, 69, 76, 82, 86, 87, 94, 99, 115~117, 119~121, 137~139, 149~151
5195210402	SMD RESISTOR	1/10W, 100K, J, 0805	5	R52, 68, 74, 80, 100
5195210502	SMD RESISTOR	1/10W, 1M, J, 0805	1	R38
5195210602	SMD RESISTOR	1/10W, 10M, J, 0805	1	R18
5195218102	SMD RESISTOR	1/10W, 180 ohm, J, 0805	20	R10, 11, 23, 25~31, 65, 77, 89, 90~93, 95, 96, 98
5195220202	SMD RESISTOR	1/10W, 2K, J, 0805	5	R2, 16, 64, 78, 146
5195220302	SMD RESISTOR	1/10W, 20K, J, 0805	2	R21, 66

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
5195220402	SMD RESISTOR	1/10W, 200K, J, 0805	2	R73, 79
5195222102	SMD RESISTOR	1/10W, 220 ohm, J, 0805	3	R46, 47, 50
5195227502	SMD RESISTOR	1/10W, 2.7M, J, 0805	1	R53
5195230202	SMD RESISTOR	1/10W, 3K, J, 0805	5	R22, 48, 81, 144, 145
5195247402	SMD RESISTOR	1/10W, 470K, J, 0805	1	R41
5195251002	SMD RESISTOR	1/10W, 51 ohm, J, 0805	1	R8
5195251202	SMD RESISTOR	1/10W, 5.1K, J, 0805	1	R20
5195291102	SMD RESISTOR	1/10W, 910 ohm, J, 0805	1	R19
5195300004	SMD RESISTOR	1/8W, O ohm, J, 1206	1	F1
5195310004	SMD RESISTOR	1/8W, 10 ohm, J, 1206	1	R83
5213322193	ELECTRIC CAP	220uf/16V/P=3.5mm	2	C17, 27
5213447093	ELECTRIC CAP	47uf/25V/P=2.5mm	10	C25, 26, 41, 43, 48~50 52, 61, 64
5213510093	ELECTRIC CAP	10uf/35V/P=2.0mm	1	C44
5285410002	SMD CERAMIC CAP	10pf/50V/J/NPO/0805	2	C71, 72
5285410102	SMD CERAMIC CAP	100pf/50V/J/NPO/0805	1	C33
5285418002	SMD CERAMIC CAP	18pf/50V/J/NPO/0805	1	C73
5285418102	SMD CERAMIC CAP	180pf/50V/J/NPO/0805	1	C2
5285422002	SMD CERAMIC CAP	22pf/50V/J/NPO/0805	2	C10, 11
5288322402	SMD CERAMIC CAP	0.22uf/MCC/NPO/0805	1	C6
5285433102	SMD CERAMIC CAP	330pf/50V/J/NPO/0805	4	C3, 4, 53, 74
5285456102	SMD CERAMIC CAP	560pf/50V/J/NPO/0805	1	C62
5286510202	SMD CERAMIC CAP	1000pf/X7R/0805	4	C14, 16, 66, 69
5286510302	SMD CERAMIC CAP	0.01uf/X7R/50V/K/0805	1	C19
5286522302	SMD CERAMIC CAP	0.022uf/50V/K/X7R/0805	1	R153
5286547302	SMD CERAMIC CAP	0.047uf/50V/K/X7R/0805	2	C21, 36
5288010502	SMD CERAMIC CAP	1uf/MCC/Y5V/1C/0805	3	C12, 80
5288010504	SMD CERAMIC CAP	1uf/MCC/Y5V/1C/1206	1	C22
5288610402	SMD CERAMIC CAP	0.1uf/50V/Z/Z5U/0805	43	C1, 5, 7, 8, 13, 18, 24, 28~32, 34, 35, 37~40, 42, 45, 46, 47, 51, 54~60, 63, 65, 67, 68, 70, 75, 76, 78, 79, 81, 82, 83, 85
6500037800	CONNECTOR	3594S08HU00/2810-8PRG	1	J5
6500037900	CONNECTOR	3594S16HU00/2810-16PRG	1	J10
6502026301	HEADER	5045-02A	1	J4
6502027501	HEADER	5267-06A	1	J7

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
6550603200	IC SOCKET	IC160-0324-301	1	U16
6613576409	SMT SWITCHING DIODE	RLS4148	22	D1, 2, 4~23
6615404909	SMT ZENER DIODE	RLZ3.6B	2	ZD5, 6
6615413709	SMT ZENER DIODE	RLZ5.1B	2	ZD1, 7
6615414509	SMT ZENER DIODE	RLZ5.6B	2	ZD2, 3
6615414909	SMT ZENER DIODE	RLZ24B	1	ZD4
6621005509	TRANSISTOR	2SC2412KR	1	Q1
6623000609	H.F PNP TRANSISTOR	2SA1036KR	3	Q2, 3, 4
6640255709	VOLTAGE DECTECTOR	XC61BN2412MR	1	U11
6640256000	VOLTAGE DECTECTOR	XC61BN4512MR	1	U12
6642001509	PERIPHERAL DRIVER ARRAY IC	TD62003AF	2	U9, 10
6644001909	LINEAR IC	LM386M	1	U5
6644002300	LINEAR IC	BA4558F	2	U14, 15
6644200309	LINEAR IC	LF353M	1	U6
6644250609	SMT IC	LM324M	1	U8
6644250901	LINEAR IC	LM339-D	1	U1
6644303400	TIMER IC	NE555D	1	U21
6645005709	DIGITAL MOS IC	4066BF	1	U4
6645215009	CMOS IC	TC4053BF	1	U3
6646202019	TTL LOGIC IC	TC7S66F	1	U20
6647106809	IC SRAM 70ns	W24257S-70L/LL	1	U19
6647114509	DRAM IC	HY5118164BJC	1	U22
6647405109	FAX ENGIN	FC200-M (11614-31) + RFX144V24 (R6675-51)	1set	U2 + U13
6699002900	CRYSTAL	32.768KHZ	1	X1
6699012700	CRYSTAL	49.92MHZ	1	X2
6699012900	OSCILLATOR	20MHZ	1	Y1
6831000700	BEAD CHOKE COIL	K5BRH	4	L1, 2, 4, 7
6839001800	INDUCTOR	4.7uh, 5%	1	L6
6990101700	NI-MH BATTERY	4.8V/70mAH	1	BT2
6990102000	NI-MH BATTERY	3.6V/70mAH	1	BT1

8.2 Key Board Part List

KEY BOARD P.C.B ASM

P/N:0482325025(0.3)

TTIC PART NO	DESCRIPTION		QM	REFERENCE
0482302784	HEADER	2028P18VU00	1	JP1
0482314503	CONNECTOR	B3B-PH-K	1	JP5
0482314608	CONNECTOR	S8B-PH-K	1	JP3(彎腳)
0482325015	KEY BOARD P.C.B	TF-300P	1	P.C.B
0482325406	FLAT CABLE	K/B-LCD(14P, L=35mm)	1	JP2
0482355181	絕緣膠帶 ACETATE-TAPE	寺岡-NO.570F 黑色#4, W19	1	
5195210302	SMD RESISTOR	1/10W, 10K, J, 0805	7	R6~R11, R14
5195218102	SMD RESISTOR	1/10W, 180 ohm, J, 0805	3	R1, R2, R3
5195233102	SMD RESISTOR	1/10W, 330 ohm, J, 0805	2	R12, R13
5286510402	SMT CERAMIC CAP	0.1uf/50V/J/NPO/0805	2	C1, C2
6502031300	CONNECTOR	5268-03A	1	JP4(彎腳)
6604003400	LCD MODULES	PC1601AR-AEB	1	
6613576409	SMT SWITCHING DIODE	RLS4148	8	D1~D8
6618254009	LIGHT EMITTING DIODE	EL95-21VRC/TR7	1	LED1
6618254109	LIGHT EMITTING DIODE	EL95-21VGC/TR7	2	LED2, LED3
6621005509	TRANSISTOR	2SC2412KR	1	Q1

8.3 Print Board Part List

PRINTER BOARD P.C.B ASM

P/N:0482325040 (0.6)

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
0482300381	INDUCTOR	SBT-0260T	1	L5
0482302504	CONNECTOR	IL-S-6P-S2T2-EF	1	J6
0482302515	CONNECTOR	IL-Y-2P-S15T2-EF	1	J3
0482314606	CONNECTOR	S6B-PH-K	1	J8
0482314608	CONNECTOR	S8B-PH-K	1	J7
0482325030	PRINT BOARD	TF-300P	1	P.C.B
5193211012	SMD RESISTOR	1/10W,F,1.1K,0805	1	R41
5193275012	SMD RESISTOR	1/10W,F,7.5K,0805	1	R43
5193512796	SMD RESISTOR	1/2W,F,12.7Ù,2010	4	R6,7,8,9
5195200002	SMD RESISTOR	1/10W,J,0Ù,0805	4	L1,2,3,4
5195210202	SMD RESISTOR	1/10W,J,1K,0805	8	R17~19,30~33,51
5195210302	SMD RESISTOR	1/10W,J,10K,0805	16	R2~5,10~13,20~23, 34~37
5195212402	SMD RESISTOR	1/10W,J,120K,0805	3	R26,27,28
5195222102	SMD RESISTOR	1/10W,J,220Ù,0805	5	R52,53,54,55,56
5195222202	SMD RESISTOR	1/10W,J,2.2K,0805	5	R14,29,46,47,48
5195227302	SMD RESISTOR	1/10W,J,27K,0805	1	R25
5195233102	SMD RESISTOR	1/10W,J,330Ù,0805	1	R57
5195247302	SMD RESISTOR	1/10W,J,47K,0805	3	R24,44,45
5195268202	SMD RESISTOR	1/10W,J,6.8K,0805	7	R1,15,16,38,39,40,42
5213322093	ELECTRIC CAP	22ì F/16V/P=2.0mm	1	C43
5213510193	ELECTRIC CAP	100ì F/35V/P=3.5mm	2	C41,42
5285410102	SMD CERAMIC CAP	100pF/50V/J/NPO/0805	4	C32,33,38,39
5285410202	SMD CERAMIC CAP	1000pF/50V/J/NPO/0805	6	C26,29~31,46,49
5285447002	SMD CERAMIC CAP	47pF/50V/J/NPO/0805	4	C34,35,36,37
5286510302	SMD CERAMIC CAP	0.01ì F/50V/K/X7R/0805	16	C11~16,19,20,23,24, 52~57
5286510402	SMD CERAMIC CAP	0.1ì F/50V/K/X7R/0805	16	C9,10,17,18,21,22,25, 27,40,44,45,47,48, 50,51,58
6500037709	SMD CONNECTOR	1056S30DT11	2	J1,2
6502026401	HEADER	5045-06A	1	J4
6502027201	HEADER	5267-03A	1	J5

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
6550603200	SMT PLCC SOCKET	AT29C010A(32PIN)	1	U20
6611575509	SMD DIODE	RLR4004/RLR4001	4	D1~4
6615414509	SMD ZENER DIODE	5.6V/0.5W(RLZ5.6B)	2	D6,7
6615583300	ZENER DIODE	1N5354B	1	D5
6619000109	HIGH-SPEED DOUBLE DIODE	BAW56	2	U9,16
6619000209	HIGH-SPEED DOUBLE DIODE	BAV99	3	U7,8,12
6620001109	DARLINGTON SWITCH	L6221CD(SOP 16PIN)	1	U13
6622101809	Switching Transistor	MMBT4401LT1(NPN)	1	Q1
6640100708	REGULATOR IC	LM431ACMX	1	U15
6644250609	SMD IC	LM324M	1	U11
6644250901	LINEAR IC	LM339-D	1	U10
6644950100	LINEAR DRIVER	L149V	1	U17
6647015609	CPU	68EC000FU18[QEP 64P]	1	U19
6647106809	IC SRAM 70ns	W24257S-70LL/LL	1	U21
6647314500	MUX	SC79168DR2	6	U1~6
6648013400	DMOS Full Bridge Driver IC	L6201AD	1	U14
6648013600	IC DIGITAL ASIC	SCT38152FD05	1	U18
6699014800	CRYSTAL	HC-49/U-S(16MHZ,16pf)	1	Y1

8.4 SIMCARD Board Part List

P/N:0482325055

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
6512008000	IC CARD CONNECTOR	XR7A-0635-2	1	U1
0482302726	FLAT CABLE CONNECTOR (SMD)	06FM-1.0SP-1.9	1	JP6
0482325045	SIM CARD PCB	TF-300P	1	PCB

8.5 NCU Board Part List

PN: 0482325310 (Taiwan) VER 1

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
0482300381	CHOKE	SBT-0260	4	L1, L2, L5, L6
0482300577	JUMP WIRE	5mm	4	L9, L10, L11, L12,
0482300584	JUMP WIRE	6mm	13	JP1, JP2, JP9, JP13, JP16, JP19.JP23, JP24,

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
				JP26, JP27, JP30, JP31, JP33
0482302564	TRANSFOMER	LB-1058-D	1	T1
0482314502	CONNECTOR	B2B-PH-K-WHITE	1	J8
0482314504	CONNECTOR	B4B-PH-K-WHITE	1	J3
0482325200	TEL/NCU PCB	TF-300P (VER 0.5)	1	
0482378001	GROUND PIN	RT-01T-1.3B	1	GND
5195200002	RESISTOR (SMD)	0, 0805	3	R4, R34, R55
5195210102	RESISTOR (SMD)	100, 0805	2	R36, R50
5195210202	RESISTOR (SMD)	1K, 0805	2	R32, R33
5195210302	RESISTOR (SMD)	10K, 0805	4	R21, R40, R51, R52
5195210402	RESISTOR (SMD)	100K, 0805	2	R20, R48
5195210502	RESISTOR (SMD)	1M, 0805	1	R22
5195210602	RESISTOR (SMD)	10M, 0805	1	R14
5195215202	RESISTOR (SMD)	1K5, 0805	1	R26
5195215402	RESISTOR (SMD)	150K, 0805	1	R23
5195218102	RESISTOR (SMD)	180, 0805	1	R39
5195216302	RESISTOR (SMD)	16K, 0805	1	R42
5195220302	RESISTOR (SMD)	20K, 0805	1	R11
5195222202	RESISTOR (SMD)	2K2, 0805	2	R15, R31
5195222402	RESISTOR (SMD)	220K, 0805	2	R17, R24
5195230102	RESISTOR (SMD)	300, 0805	1	R28
5195233402	RESISTOR (SMD)	330K, 0805	2	R16, R47
5195247102	RESISTOR (SMD)	470, 0805	2	R5, R49
5195247202	RESISTOR (SMD)	4K7, 0805	2	R30, R46
5195247302	RESISTOR (SMD)	47K, 0805	3	R12, R13, R38
5195256102	RESISTOR (SMD)	560, 0805	1	R29
5195262102	RESISTOR (SMD)	620, 0805	1	R1
5195291302	RESISTOR (SMD)	91K, 0805	1	R41

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
5195333004	RESISTOR (SMD)	33, 1206	1	R27
5195347004	RESISTOR (SMD)	47, 1206	2	R2, R3
5213210191	E.C.	100u	2	C27, C31
5213222191	E.C.	220u	1	C33
5213510010	E.C.	10u	3	C14, C19, C36
5213610910	E.C.	1u	3	C20, C29, C42
5213622991	E.C.	2.2u	2	C1, C28
5272210510	M.C.	1u	3	C4, C10, C12
5272233300	M.C.	0.033u	1	C3
5285415002	CAPACITOR (SMD)	15P	1	C30
5286510302	CAPACITOR (SMD)	10n	6	C13, C17, C24, C25, C37, C38
5286547302	CAPACITOR (SMD)	47n	1	C26
6444013200	REED RELAY	G6S-2-Y	3	K1, K2, K3
6474005200	SLIDE SWITCH	SSD-2P3T-6407	1	S1
6502049800	CONNECTOR	B2B-PH-K-RED	1	J6
6502050200	CONNECTOR	B6B-PH-K-RED	1	J5
6502050400	CONNECTOR	B8B-PH-K-RED	1	J7
6504007000	16PIN HEADER	2567P16UD00	1	J4
6611575900	DIODE	1N4005	5	D8, D11, D12, D13, D14
6612575200	DIODE	1N60	2	D9, D10
6613576409	DIODE (SMD)	1N4148	5	D1, D2, D3, D16, D17
6615406109	ZENER DIODE (SMD)	10V	1	ZD9
6615406209	ZENER DIODE (SMD)	12V	1	ZD7
6615406609	ZENER DIODE (SMD)	18V	1	ZD11
6615413709	ZENER DIODE (SMD)	5.1V	5	ZD1, ZD2, ZD5, ZD6, ZD10
6622100709	TRANSISTOR (SMD)	A14	1	Q9
6622100809	TRANSISTOR (SMD)	A42	1	Q7

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
6622101300	TRANSISTOR	A92	2	Q5, Q6
6624260200	TRANSISTOR (SMD)	8550	1	Q8
6640150500	PHOTOCOUPLER	PC817	3	PH1, PH4, PH5
6640402800	CURRENT SENSOR	MA91000045	1	CS1
6646202019	BILATERAL SWITCH	TC7S66F	1	U2
6655006000	TELPHONE IC	AS2534	1	U1
6699001202	RESONATOR	3.58MHz	1	X1
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1, J2
6982006000	VARISTOR	TNR12G391K	2	AR1, AR2
6982006300	VRRISTOR	10N221K	1	AR3
6699001202	RESONATOR	3.58MHz	1	X1
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1, J2
6982006000	VARISTOR	TNR12G391K	2	AR1, AR2
6982006300	VRRISTOR	10N221K	1	AR3

P.N.: 0482325311 (FCC) VER 1

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
0482300381	CHOKE	SBT-0260	4	L1,L2,L5,L6
0482300577	JUMP WIRE	5mm	4	L9, L10,L11,L12,
0482300584	JUMP WIRE	6mm	13	JP1,JP2,JP9,JP13,JP16 ,JP18.JP23,JP24,JP26, JP27,JP30,JP31,JP33
0482302564	TRANSFOMER	LB-1058-D	1	T1
0482314502	CONNECTOR	B2B-PH-K-WHITE	1	J8
0482314504	CONNECTOR	B4B-PH-K-WHITE	1	J3
0482325200	TEL/NCU PCB	TF-300P (VER 0.5)	1	
0482378001	GROUND PIN	RT-01T-1.3B	1	GND

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
5195200002	RESISTOR(SMD)	0, 0805	3	R4,R34,R55
5195210102	RESISTOR(SMD)	100, 0805	2	R36,R50
5195210202	RESISTOR(SMD)	1K, 0805	2	R32,R33
5195210302	RESISTOR(SMD)	10K, 0805	4	R21,R40,R51,R52
5195210402	RESISTOR(SMD)	100K, 0805	2	R20,R48
5195210502	RESISTOR(SMD)	1M, 0805	1	R22
5195210602	RESISTOR(SMD)	10M, 0805	1	R14
5195215202	RESISTOR(SMD)	1K5, 0805	1	R26
5195215402	RESISTOR(SMD)	150K, 0805	1	R23
5195216302	RESISTOR(SMD)	16K, 0805	1	R42
5195220302	RESISTOR(SMD)	20K, 0805	1	R11
5195222202	RESISTOR(SMD)	2K2, 0805	2	R15,R31
5195222402	RESISTOR(SMD)	220K, 0805	2	R17,R24
5195230102	RESISTOR(SMD)	300, 0805	1	R28
5195233402	RESISTOR(SMD)	330K, 0805	2	R16,R47
5195247102	RESISTOR(SMD)	470, 0805	2	R5,R49
5195247202	RESISTOR(SMD)	4K7, 0805	2	R30,R46
5195247302	RESISTOR(SMD)	47K, 0805	3	R12,R13,R38
5195256102	RESISTOR(SMD)	560, 0805	1	R29
5195262102	RESISTOR(SMD)	620, 0805	1	R1
5195291302	RESISTOR(SMD)	91K, 0805	1	R41
5195333004	RESISTOR(SMD)	33, 1206	1	R27
5195347004	RESISTOR(SMD)	47,1206	2	R2,R3
5213210191	E.C.	100u	2	C27,C31
5213222191	E.C.	220u	1	C33
5213510010	E.C.	10u	3	C14,C19,C36
5213610910	E.C.	1u	3	C20,C29,C42
5213622991	E.C.	2.2u	2	C1,C28

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
5272210510	M.C.	1u	3	C4,C10,C12
5272233300	M.C.	0.033u	1	C3
5285415002	CAPACITOR(SMD)	15P	1	C30
5286510302	CAPACITOR(SMD)	10n	6	C13,C17,C24,C25,C37, C38
5286547302	CAPACITOR(SMD)	47n	1	C26
6444013200	REED RELAY	G6S-2-Y	3	K1,K2,K3
6474005200	SLIDE SWITCH	SSD-2P3T-6407	1	S1
6502049800	CONNECTOR	B2B-PH-K-RED	1	J6
6502050200	CONNECTOR	B6B-PH-K-RED	1	J5
6502050400	CONNECTOR	B8B-PH-K-RED	1	J7
6504007000	16PIN HEADER	2567P16UD00	1	J4
6611575900	DIODE	1N4005	5	D8,D11,D12,D13,D14
6612575200	DIODE	1N60	2	D9,D10
6613576409	DIODE(SMD)	1N4148	5	D1,D2,D3,D16,D17
6615406109	ZENER DIODE(SMD)	10V	1	ZD9
6615406209	ZENER DIODE(SMD)	12V	1	ZD7
6615406609	ZENER DIODE(SMD)	18V	1	ZD11
6615413709	ZENER DIODE(SMD)	5.1V	5	ZD1,ZD2,ZD5,ZD6,ZD10
6622100709	TRANSISTOR(SMD)	A14	1	Q9
6622100809	TRANSISTOR(SMD)	A42	1	Q7
6622101300	TRANSISTOR	A92	2	Q5,Q6
6624260200	TRANSISTOR(SMD)	8550	1	Q8
6640150500	PHOTOCOUPLER	PC817	2	PH1,PH4
6640402800	CURRENT SENSOR	MA91000045	1	CS1
6646202019	BILATERAL SWITCH	TC7S66F	1	U2
6655006000	TELPHONE IC	AS2534	1	U1
6699001202	RESONATOR	3.58MHz	1	X1

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1,J2
6982006000	VARISTOR	TNR12G391K	2	AR1,AR2
6982006300	VRRISTOR	10N221K	1	AR3
6699001202	RESONATOR	3.58MHz	1	X1
6831002100	COIL	3mH	2	LF1,LF2
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1,J2
6982006000	VARISTOR	TNR12G391K	2	AR1,AR2
6982006300	VARISTOR	10N221K	1	AR3

P.N.: 0482325312 (Germany) VER 1

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
0482300381	CHOCK	STB-0260	4	L1,L2,L5,L6
0482300577	JUMP WIRE	5mm	4	L9, L10,L11,L12,
0482300584	JUMP WIRE	6mm	11	JP1,JP2,JP13,JP15,JP18,JP23,JP24,JP26,JP27,JP30,JP31
0482302565	TRANSFOMER	TA12002N	1	T1
0482314502	CONNECTOR	B2B-PH-K-WHITE	1	J8
0482314504	CONNECTOR	B4B-PH-K-WHITE	1	J3
0482325200	TEL/NCU PCB	TF-300P (VER 0.5)	1	
0482378001	GROUND PIN	RT-01T-1.3B	1	GND
5195200002	RESISTOR(SMD)	0, 0805	2	R4,R34
5195210102	RESISTOR(SMD)	100, 0805	1	R50
5195210202	RESISTOR(SMD)	1K, 0805	2	R32,R33
5195210302	RESISTOR(SMD)	10K, 0805	4	R10,R21,R51,R52
5195210402	RESISTOR(SMD)	100K, 0805	2	R20,R48
5195210502	RESISTOR(SMD)	1M, 0805	1	R22

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
5195210602	RESISTOR(SMD)	10M, 0805	1	R14
5195215402	RESISTOR(SMD)	150K, 0805	1	R23
5195218102	RESISTOR(SMD)	180, 0805	1	R56
5195218202	RESISTOR(SMD)	1K8, 0805	1	R29
5195220302	RESISTOR(SMD)	20K, 0805	1	R41
5195222102	RESISTOR(SMD)	220, 0805	1	R36
5195222202	RESISTOR(SMD)	2K2, 0805	2	R15,R31
5195222402	RESISTOR(SMD)	220K, 0805	2	R17,R24
5195230102	RESISTOR(SMD)	300, 0805	1	R28
5195233402	RESISTOR(SMD)	330K, 0805	2	R16,R47
5195247102	RESISTOR(SMD)	470, 0805	2	R5,R49
5195247202	RESISTOR(SMD)	4K7, 0805	1	R46
5195247302	RESISTOR(SMD)	47K, 0805	3	R12,R13,R38
5195262102	RESISTOR(SMD)	620, 0805	1	R1
5195262202	RESISTOR(SMD)	6.2K, 0805	1	R11
5195275202	RESISTOR(SMD)	7K5, 0805	1	R30
5195275302	RESISTOR(SMD)	75K, 0805	1	R40
5195333004	RESISTOR(SMD)	33, 1206	1	R27
5195382004	RESISTOR(SMD)	82,1206	2	R2,R3
5213210191	E.C.	100u	2	C27,C31
5213222191	E.C.	220u	1	C33
5213510010	E.C.	10u	3	C19,C28,C36
5213610910	E.C.	1u	4	C1,C20,C29,C42
5272233310	M.C.	0.033uF/250V	2	CF1,CF2
5272233410	M.C.	33u	1	C4
5272247410	M.C.	0.47u	2	C10,C12
5273212400	M.C.	0.12u	1	C3
5285415002	CAPACITOR(SMD)	15P	1	C30

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
5286510302	CAPACITOR(SMD)	10n	6	C13,C17,C24,C25,C37,C38
5286515302	CAPACITOR(SMD)	15n	1	C35
5286547302	CAPACITOR(SMD)	47n	1	C26
6444013200	REED RELAY	G6S-2-Y	4	K1,K2,K3,K5
6474005200	SLIDE SWITCH	SSD-2P3T-6407	1	S1
6502049800	CONNECTOR	B2B-PH-K-RED	1	J6
6502050200	CONNECTOR	B6B-PH-K-RED	1	J5
6502050400	CONNECTOR	B8B-PH-K-RED	1	J7
6504007000	16PIN HEADER	2567P16UD00	1	J4
6611575900	DIODE	1N4005	7	D8,D11,D12,D13,D14,D19,D20
6612575200	DIODE	1N60	2	D9,D10
6613576409	DIODE(SMD)	1N4148	5	D1,D2,D3,D16,D17
6615406109	ZENER DIODE(SMD)	10V	1	ZD9
6615406209	ZENER DIODE(SMD)	12V	1	ZD7
6615406609	ZENER DIODE(SMD)	18V	1	ZD11
6615413709	ZENER DIODE(SMD)	5.1V	5	ZD1,ZD2,ZD5,ZD6,ZD10
6622100709	TRANSISTOR(SMD)	A14	1	Q9
6622100809	TRANSISTOR(SMD)	A42	1	Q7
6622101300	TRANSISTOR	A92	2	Q5,Q6
6624220600	TRANSISTOR(SMD)	8550	1	Q8
6640150500	PHOTOCOUPLER	PC817	2	PH1,PH4
6640402800	CURRENT SENSOR	MA91000045	1	CS1
6644251900	LINEAR IC	LM386N-1	1	U2
6646202019	BILATERAL SWITCH	TC7S66F	1	U2
6655006000	TELPHONE IC	AS2534	1	U1
6699001202	RESONATOR	3.58MHz	1	X1
6831002100	COIL	3mH	2	LF1,LF2

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1,J2
6982006000	VARISTOR	TNR12G391K	2	AR1,AR2
6982006300	VARISTOR	10N221K	1	AR3

P.N.: 0482325313 (CTR21/38)(FOR OKI with Pulse Dailling) VER 1

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
0482300381	CHOKE	SBT-0260	4	L1,L2,L5,L6
0482300577	JUMP WIRE	5mm	4	L9, L10,L11,L12
0482300584	JUMP WIRE	6mm	12	JP1,JP2,JP9,JP13,JP15 ,JP18,JP23,JP24,JP26, JP27,JP30,JP31
0482302564	TRANSFOMER	LB-1058-D	1	T1
0482314502	CONNECTOR	B2B-PH-K-WHITE	1	J8
0482314504	CONNECTOR	B4B-PH-K-WHITE	1	J3
0482325200	TEL/NCU PCB	TF-300P (VER 0.5)	1	
0482378001	GROUND PIN	RT-01T-1.3B	1	GND
5195200002	RESISTOR(SMD)	0, 0805	2	R4,R34
5195210102	RESISTOR(SMD)	100, 0805	1	R50
5195210302	RESISTOR(SMD)	10K, 0805	3	R21,R51,R52
5195210402	RESISTOR(SMD)	100K, 0805	2	R20,R48
5195210502	RESISTOR(SMD)	1M, 0805	1	R22
5195210602	RESISTOR(SMD)	10M, 0805	1	R14
5195212002	RESISTOR(SMD)	12, 0805	1	R55
5195215402	RESISTOR(SMD)	150K, 0805	1	R23
5195220302	RESISTOR(SMD)	20K, 0805	1	R11
5195222202	RESISTOR(SMD)	2K2, 0805	2	R15,R31
5195222402	RESISTOR(SMD)	220K, 0805	2	R17,R24
5195230102	RESISTOR(SMD)	300, 0805	1	R28

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
5195233102	RESISTOR(SMD)	330, 0805	1	R36
5195233202	RESISTOR(SMD)	3.3K, 0805	2	R7,R9
5195233402	RESISTOR(SMD)	330K, 0805	2	R16,R47
5195247102	RESISTOR(SMD)	470, 0805	2	R5,R49
5195247202	RESISTOR(SMD)	4K7, 0805	2	R30,R46
5195247302	RESISTOR(SMD)	47K, 0805	5	R12,R13,R38,R40,R41
5195256102	RESISTOR(SMD)	560, 0805	1	R29
5195262102	RESISTOR(SMD)	620, 0805	3	R1,R32,R33
5195310004	RESISTOR(SMD)	10,1206	2	R2,R3
5195315004	RESISTOR(SMD)	15, 1206	2	R6,R8
5195333004	RESISTOR(SMD)	33, 1206	1	R27
5213210191	E.C.	100u	2	C27,C31
5213222191	E.C.	220u	1	C33
5213510010	E.C.	10u	2	C19,C36
5213610910	E.C.	1u	3	C20,C29,C42
5213622991	E.C.	2.2u	2	C1,C28
5213647993	E.C.	4.7u	1	C43
5214422900	E.C.	2.2u/250V	2	C5,C6
5231005102	M-L.C	0.33u	1	JP33
5272210510	M.C.	1u	1	C4
5272233300	M.C.	0.033u	1	C3
5272247410	M.C.	0.47u	2	C10,C12
5285415002	CAPACITOR(SMD)	15P	1	C30
5286510302	CAPACITOR(SMD)	10n	6	C13,C17,C24,C25,C37, C38
5286522302	CAPACITOR(SMD)	22n	1	C35
5286547302	CAPACITOR(SMD)	47n	1	C26
6444013200	REED RELAY	G6S-2-Y	3	K1,K2,K3

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
6474005200	SLIDE SWITCH	SSD-2P3T-6407	1	S1
6502049800	CONNECTOR	B2B-PH-K-RED	1	J6
6502050200	CONNECTOR	B6B-PH-K-RED	1	J5
6504007000	16PIN HEADER	2567P16UD00	1	J4
6611575900	DIODE	1N4005	5	D8,D11,D12,D13,D14
6612575200	DIODE	1N60	2	D9,D10
6613576409	DIODE(SMD)	1N4148	7	D1,D2,D3,D6,D7,D16,D17
6615406109	ZENER DIODE(SMD)	10V	1	ZD9
6615406209	ZENER DIODE(SMD)	12V	1	ZD7
6615406609	ZENER DIODE(SMD)	18V	1	ZD11
6615413709	ZENER DIODE(SMD)	5.1V	5	ZD1,ZD2,ZD5,ZD6,ZD10
6622100709	TRANSISTOR(SMD)	A14	1	Q9
6622100809	TRANSISTOR(SMD)	A42	1	Q7
6622101300	TRANSISTOR	A92	3	Q5,Q6,Q11
6622250800	TRANSISTOR	BC546B	2	Q2,Q4
6622400800	TRANSISTOR	TIP48	2	Q1,Q3
6624260200	TRANSISTOR(SMD)	8550	1	Q8
6640150500	PHOTOCOUPLER	PC817	2	PH1,PH4
6640402800	CURRENT SENSOR	MA91000045	1	CS1
6646202019	BILATERAL SWITCH	TC7S66F	1	U2
6655006000	TELPHONE IC	AS2534	1	U1
6699001202	RESONATOR	3.58MHz	1	X1
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1,J2
6982006000	VARISTOR	TNR12G391K	2	AR1,AR2
6982006300	VRRISTOR	10N221K	1	AR3

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
0482300381	CHOKE	SBT-0260	4	L1,L2,L5,L6
0482300577	JUMP WIRE	5mm	5	L9, L10,L11,L12,S1(PIN5,6)
0482300584	JUMP WIRE	6mm	12	JP1,JP4,JP9,JP13,JP15 ,JP20,JP23,JP24,JP26, JP27,JP30,JP31
0482302564	TRANSFOMER	LB-1058-D	1	T1
0482314502	CONNECTOR	B2B-PH-K-WHITE	1	J8
0482314504	CONNECTOR	B4B-PH-K-WHITE	1	J3
0482325200	TEL/NCU PCB	TF-300P (VER 0.5)	1	
0482378001	GROUND PIN	RT-01T-1.3B	1	GND
5195200002	RESISTOR(SMD)	0, 0805	2	R4,R34
5195210102	RESISTOR(SMD)	100, 0805	1	R50
5195210302	RESISTOR(SMD)	10K, 0805	3	R21,R51,R52
5195210402	RESISTOR(SMD)	100K, 0805	2	R20,R48
5195210502	RESISTOR(SMD)	1M, 0805	1	R22
5195210602	RESISTOR(SMD)	10M, 0805	1	R14
5195212002	RESISTOR(SMD)	12, 0805	1	R55
5195215402	RESISTOR(SMD)	150K, 0805	1	R23
5195220302	RESISTOR(SMD)	20K, 0805	1	R11
5195222202	RESISTOR(SMD)	2K2, 0805	2	R15,R31
5195222402	RESISTOR(SMD)	220K, 0805	2	R17,R24
5195230102	RESISTOR(SMD)	300, 0805	1	R28
5195233102	RESISTOR(SMD)	330, 0805	1	R36
5195233202	RESISTOR(SMD)	3.3K, 0805	2	R7,R9
5195233402	RESISTOR(SMD)	330K, 0805	2	R16,R47
5195247102	RESISTOR(SMD)	470, 0805	2	R5,R49
5195247202	RESISTOR(SMD)	4K7, 0805	2	R30,R46
5195247302	RESISTOR(SMD)	47K, 0805	5	R12,R13,R38,R40,R41

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
5195256102	RESISTOR(SMD)	560, 0805	1	R29
5195262102	RESISTOR(SMD)	620, 0805	3	R1,R32,R33
5195310004	RESISTOR(SMD)	10,1206	2	R2,R3
5195315004	RESISTOR(SMD)	15, 1206	2	R6,R8
5195333004	RESISTOR(SMD)	33, 1206	1	R27
5213210191	E.C.	100u	2	C27,C31
5213222191	E.C.	220u	1	C33
5213510010	E.C.	10u	2	C19,C36
5213610910	E.C.	1u	3	C20,C29,C42
5213622991	E.C.	2.2u	2	C1,C28
5213647993	E.C.	4.7u	1	C43
5214422900	E.C.	2.2u/250V	2	C5,C6
5231005102	M-L.C	0.33u	1	JP33
5272210510	M.C.	1u	1	C4
5272233300	M.C.	0.033u	1	C3
5272247410	M.C.	0.47u	2	C10,C12
5285415002	CAPACITOR(SMD)	15P	1	C30
5286510302	CAPACITOR(SMD)	10n	6	C13,C17,C24,C25,C37, C38
5286522302	CAPACITOR(SMD)	22n	1	C35
5286547302	CAPACITOR(SMD)	47n	1	C26
6444013200	REED RELAY	G6S-2-Y	3	K1,K2,K3
6502049800	CONNECTOR	B2B-PH-K-RED	1	J6
6502050200	CONNECTOR	B6B-PH-K-RED	1	J5
6502050400	CONNECTOR	B8B-PH-K-RED	1	J7
6504007000	16PIN HEADER	2567P16UD00	1	J4
6611575900	DIODE	1N4005	5	D8,D11,D12,D13,D14
6612575200	DIODE	1N60	2	D9,D10

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
6613576409	DIODE(SMD)	1N4148	7	D1,D2,D3,D6,D7,D16,D17
6615406109	ZENER DIODE(SMD)	10V	1	ZD9
6615406209	ZENER DIODE(SMD)	12V	1	ZD7
6615406609	ZENER DIODE(SMD)	18V	1	ZD11
6615413709	ZENER DIODE(SMD)	5.1V	5	ZD1,ZD2,ZD5,ZD6,ZD10
6622100709	TRANSISTOR(SMD)	A14	1	Q9
6622100809	TRANSISTOR(SMD)	A42	1	Q7
6622101300	TRANSISTOR	A92	3	Q5,Q6,Q11
6622250800	TRANSISTOR	BC546B	2	Q2,Q4
6622400800	TRANSISTOR	TIP48	2	Q1,Q3
6624260200	TRANSISTOR(SMD)	8550	1	Q8
6640150500	PHOTOCOUPLER	PC817	2	PH1,PH4
6640402800	CURRENT SENSOR	MA91000045	1	CS1
6646202019	BILATERAL SWITCH	TC7S66F	1	U2
6655006000	TELPHONE IC	AS2534	1	U1
6699001202	RESONATOR	3.58MHz	1	X1
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1,J2
6982006000	VARISTOR	TNR12G391K	2	AR1,AR2
6982006300	VRRISTOR	10N221K	1	AR3

P.N.: 0482325315 (CTR21/38)(For Telia & OKI without Pulse Dailling) VER 1

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
0482300381	CHOKE	SBT-0260	4	L1,L2,L5,L6
0482300577	JUMP WIRE	5mm	5	L9, L10,L11,L12,S1(PIN5,6)
0482300584	JUMP WIRE	6mm	12	JP1,JP2,JP9,JP13,JP15,JP20,JP23,JP24,JP26,JP27,JP30,JP31

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
0482302564	TRANSFOMER	LB-1058-D	1	T1
0482314502	CONNECTOR	B2B-PH-K-WHITE	1	J8
0482314504	CONNECTOR	B4B-PH-K-WHITE	1	J3
0482325200	TEL/NCU PCB	TF-300P (VER 0.5)	1	
0482378001	GROUND PIN	RT-01T-1.3B	1	GND
5195200002	RESISTOR(SMD)	0, 0805	2	R4,R34
5195210102	RESISTOR(SMD)	100, 0805	1	R50
5195210302	RESISTOR(SMD)	10K, 0805	3	R21,R51,R52
5195210402	RESISTOR(SMD)	100K, 0805	2	R20,R48
5195210502	RESISTOR(SMD)	1M, 0805	1	R22
5195210602	RESISTOR(SMD)	10M, 0805	1	R14
5195212002	RESISTOR(SMD)	12, 0805	1	R55
5195215402	RESISTOR(SMD)	150K, 0805	1	R23
5195220302	RESISTOR(SMD)	20K, 0805	1	R11
5195222202	RESISTOR(SMD)	2K2, 0805	2	R15,R31
5195222402	RESISTOR(SMD)	220K, 0805	2	R17,R24
5195230102	RESISTOR(SMD)	300, 0805	1	R28
5195233102	RESISTOR(SMD)	330, 0805	1	R36
5195233202	RESISTOR(SMD)	3.3K, 0805	2	R7,R9
5195233402	RESISTOR(SMD)	330K, 0805	2	R16,R47
5195247102	RESISTOR(SMD)	470, 0805	2	R5,R49
5195247202	RESISTOR(SMD)	4K7, 0805	2	R30,R46
5195247302	RESISTOR(SMD)	47K, 0805	5	R12,R13,R38,R40,R41
5195256102	RESISTOR(SMD)	560, 0805	1	R29
5195262102	RESISTOR(SMD)	620, 0805	3	R1,R32,R33
5195310004	RESISTOR(SMD)	10,1206	2	R2,R3
5195315004	RESISTOR(SMD)	15, 1206	2	R6,R8
5195333004	RESISTOR(SMD)	33, 1206	1	R27

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
5213210191	E.C.	100u	2	C27,C31
5213222191	E.C.	220u	1	C33
5213510010	E.C.	10u	2	C19,C36
5213610910	E.C.	1u	3	C20,C29,C42
5213622991	E.C.	2.2u	2	C1,C28
5213647993	E.C.	4.7u	1	C43
5214422900	E.C.	2.2u/250V	2	C5,C6
5231005102	M-L.C	0.33u	1	JP33
5272210510	M.C.	1u	1	C4
5272233300	M.C.	0.033u	1	C3
5272247410	M.C.	0.47u	2	C10,C12
5285415002	CAPACITOR(SMD)	15P	1	C30
5286510302	CAPACITOR(SMD)	10n	6	C13,C17,C24,C25,C37,C38
5286522302	CAPACITOR(SMD)	22n	1	C35
5286547302	CAPACITOR(SMD)	47n	1	C26
6444013200	REED RELAY	G6S-2-Y	3	K1,K2,K3
6502049800	CONNECTOR	B2B-PH-K-RED	1	J6
6502050200	CONNECTOR	B6B-PH-K-RED	1	J5
6504007000	16PIN HEADER	2567P16UD00	1	J4
6611575900	DIODE	1N4005	5	D8,D11,D12,D13,D14
6612575200	DIODE	1N60	2	D9,D10
6613576409	DIODE(SMD)	1N4148	7	D1,D2,D3,D6,D7,D16,D17
6615406109	ZENER DIODE(SMD)	10V	1	ZD9
6615406209	ZENER DIODE(SMD)	12V	1	ZD7
6615406609	ZENER DIODE(SMD)	18V	1	ZD11
6615413709	ZENER DIODE(SMD)	5.1V	5	ZD1,ZD2,ZD5,ZD6,ZD10
6622100709	TRANSISTOR(SMD)	A14	1	Q9

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
6622100809	TRANSISTOR(SMD)	A42	1	Q7
6622101300	TRANSISTOR	A92	3	Q5,Q6,Q11
6622250800	TRANSISTOR	BC546B	2	Q2,Q4
6622400800	TRANSISTOR	TIP48	2	Q1,Q3
6624260200	TRANSISTOR(SMD)	8550	1	Q8
6640150500	PHOTOCOUPLER	PC817	2	PH1,PH4
6640402800	CURRENT SENSOR	MA91000045	1	CS1
6646202019	BILATERAL SWITCH	TC7S66F	1	U2
6655006000	TELPHONE IC	AS2534	1	U1
6699001202	RESONATOR	3.58MHz	1	X1
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1,J2
6982006000	VARISTOR	TNR12G391K	2	AR1,AR2
6982006300	VRRISTOR	10N221K	1	AR3
6982006300	VARISTOR	10N221K	1	AR3

PN: 0482325316 (CTR21/38)(For BT PaperJet 100) VER 3

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
0482300381	CHOKE	SBT-0260	4	L1,L2,L5,L6
0482300577	JUMP WIRE	5mm	5	L9, L10,L11,L12,S1(PIN5,6)
0482300584	JUMP WIRE	6mm	12	JP1,JP2,JP9,JP13,JP15, JP20,JP23,JP24,JP26,JP 27,JP30,JP31
0482302564	TRANSFOMER	LB-1058-D	1	T1
0482314502	CONNECTOR	B2B-PH-K-WHITE	1	J8
0482314504	CONNECTOR	B4B-PH-K-WHITE	1	J3
0482325200	TEL/NCU PCB	TF-300P	1	
0482378001	GROUND PIN	RT-01T-1.3B	1	GND
5195200002	RESISTOR(SMD)	0, 0805	2	R4,R34

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
5195210102	RESISTOR(SMD)	100, 0805	1	R50
5195210302	RESISTOR(SMD)	10K, 0805	3	R21,R51,R52
5195210402	RESISTOR(SMD)	100K, 0805	2	R20,R48
5195210502	RESISTOR(SMD)	1M, 0805	1	R22
5195210602	RESISTOR(SMD)	10M, 0805	1	R14
5195212002	RESISTOR(SMD)	12, 0805	1	R55
5195215402	RESISTOR(SMD)	150K, 0805	1	R23
5195218102	RESISTOR(SMD)	180, 0805	1	R39
5195220302	RESISTOR(SMD)	20K, 0805	1	R11
5195222202	RESISTOR(SMD)	2K2, 0805	2	R15,R31
5195222402	RESISTOR(SMD)	220K, 0805	2	R17,R24
5195230102	RESISTOR(SMD)	300, 0805	1	R28
5195233102	RESISTOR(SMD)	330, 0805	1	R36
5195233202	RESISTOR(SMD)	3.3K, 0805	2	R7,R9
5195233402	RESISTOR(SMD)	330K, 0805	2	R16,R47
5195247102	RESISTOR(SMD)	470, 0805	2	R5,R49
5195247202	RESISTOR(SMD)	4K7, 0805	2	R30,R46
5195247302	RESISTOR(SMD)	47K, 0805	5	R12,R13,R38,R40,R41
5195256102	RESISTOR(SMD)	560, 0805	1	R29
5195262102	RESISTOR(SMD)	620, 0805	3	R1,R32,R33
5195310004	RESISTOR(SMD)	10,1206	2	R2,R3
5195315004	RESISTOR(SMD)	15, 1206	2	R6,R8
5195333004	RESISTOR(SMD)	33, 1206	1	R27
5213210191	E.C.	100u	2	C27,C31
5213222191	E.C.	220u	1	C33
5213510010	E.C.	10u	2	C19,C36
5213610910	E.C.	1u	3	C20,C29,C42
5213622991	E.C.	2.2u	2	C1,C28

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
5213647993	E.C.	4.7u	1	C43
5214422900	E.C.	2.2u/250V	2	C5,C6
5231005102	M-L.C	0.33u	1	JP33
5272210510	M.C.	1u	1	C4
5272233300	M.C.	0.033u	1	C3
5272247410	M.C.	0.47u	2	C10,C12
5285415002	CAPACITOR(SMD)	15P	1	C30
5286510302	CAPACITOR(SMD)	10n	6	C13,C17,C24,C25,C37,C38
5286522302	CAPACITOR(SMD)	22n	1	C35
5286547302	CAPACITOR(SMD)	47n	1	C26
6444013200	REED RELAY	G6S-2-Y	3	K1,K2,K3
6502049800	CONNECTOR	B2B-PH-K-RED	1	J6
6502050200	CONNECTOR	B6B-PH-K-RED	1	J5
6502050400	CONNECTOR	B8B-PH-K-RED	1	J7
6504007000	16PIN HEADER	2567P16UD00	1	J4
6611575900	DIODE	1N4005	5	D8,D11,D12,D13,D14
6612575200	DIODE	1N60	2	D9,D10
6613576409	DIODE(SMD)	1N4148	7	D1,D2,D3,D6,D7,D16,D17
6615406109	ZENER DIODE(SMD)	10V	1	ZD9
6615406209	ZENER DIODE(SMD)	12V	1	ZD7
6615406609	ZENER DIODE(SMD)	18V	1	ZD11
6615413709	ZENER DIODE(SMD)	5.1V	5	ZD1,ZD2,ZD5,ZD6,ZD10
6622100709	TRANSISTOR(SMD)	A14	1	Q9
6622100809	TRANSISTOR(SMD)	A42	1	Q7
6622101300	TRANSISTOR	A92	3	Q5,Q6,Q11
6622250800	TRANSISTOR	BC546B	2	Q2,Q4
6622400800	TRANSISTOR	TIP48	2	Q1,Q3

TTIC PART NO	DESCRIPTION	SIZE	QM	REFERENCE
6624260200	TRANSISTOR (SMD)	8550	1	Q8
6640150500	PHOTOCOUPLER	PC817	3	PH1,PH4,PH5
6640402800	CURRENT SENSOR	MA91000045	1	CS1
6646202019	BILATERAL SWITCH	TC7S66F	1	U2
6655006000	TELPHONE IC	AS2534	1	U1
6699001202	RESONATOR	3.58MHz	1	X1
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1,J2
6982006000	VARISTOR	TNR12G391K	2	AR1,AR2
6982006300	VRRISTOR	10N221K	1	AR3

P.N.: 0482325351 (CTR21/38)(For BT PaperJet 200) VER 1

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
0482300381	CHOKE	SBT-0260	4	L1,L2,L5,L6
0482300577	JUMP WIRE	5mm	5	L9, L10, L11, L12, S1(PIN5,6)
0482300584	JUMP WIRE	6mm	10	JP1,JP2,JP9,JP13,JP15 ,JP20,JP26,JP27,JP30, JP31
0482302500	CONNECTOR	IL-S-2P-S2T2-EF	1	J9
0482302564	TRANSFOMER	LB-1058-D	1	T1
0482314502	CONNECTOR	B2B-PH-K-WHITE	1	J8
0482314504	CONNECTOR	B4B-PH-K-WHITE	1	J3
0482325201	TEL/NCU PCB	TF-300PT	1	
0482378001	GROUND PIN	RT-01T-1.3B	1	GND
5195200002	RESISTOR(SMD)	0, 0805	2	R4,R34
5195210102	RESISTOR(SMD)	100, 0805	1	R50
5195210302	RESISTOR(SMD)	10K, 0805	3	R21,R51,R52
5195210402	RESISTOR(SMD)	100K, 0805	2	R20,R48
5195210502	RESISTOR(SMD)	1M, 0805	1	R22

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
5195210602	RESISTOR(SMD)	10M, 0805	1	R14
5195212002	RESISTOR(SMD)	12, 0805	1	R55
5195215402	RESISTOR(SMD)	150K, 0805	1	R23
5195218102	RESISTOR(SMD)	180, 0805	1	R39
5195220302	RESISTOR(SMD)	20K, 0805	1	R11
5195222202	RESISTOR(SMD)	2K2, 0805	2	R15,R31
5195222402	RESISTOR(SMD)	220K, 0805	2	R17,R24
5195230102	RESISTOR(SMD)	300, 0805	1	R28
5195233102	RESISTOR(SMD)	330, 0805	1	R36
5195233202	RESISTOR(SMD)	3.3K, 0805	2	R7,R9
5195233402	RESISTOR(SMD)	330K, 0805	2	R16,R47
5195247102	RESISTOR(SMD)	470, 0805	3	R5,R49,R54
5195247202	RESISTOR(SMD)	4K7, 0805	2	R30,R46
5195247302	RESISTOR(SMD)	47K, 0805	6	R12,R13,R38,R40,R41, R56
5195256102	RESISTOR(SMD)	560, 0805	1	R29
5195262102	RESISTOR(SMD)	620, 0805	3	R1,R32,R33
5195310004	RESISTOR(SMD)	10,1206	2	R2,R3
5195315004	RESISTOR(SMD)	15, 1206	2	R6,R8
5195333004	RESISTOR(SMD)	33, 1206	1	R27
5213210191	E.C.	100u	2	C27,C31
5213222191	E.C.	220u	1	C33
5213510010	E.C.	10u	2	C19,C36
5213610910	E.C.	1u	2	C20,C29
5213622991	E.C.	2.2u	2	C1,C28
5213647993	E.C.	4.7u	1	C43
5214422900	E.C.	2.2u/250V	2	C5,C6
5231005102	M-L.C	0.33u	1	JP33

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
5272210510	M.C.	1u	1	C4
5272233300	M.C.	0.033u	1	C3
5272247410	M.C.	0.47u	2	C10,C12
5285415002	CAPACITOR(SMD)	15P	1	C30
5286510302	CAPACITOR(SMD)	10n	7	C13,C17,C24,C25,C37,C38,C40
5286522302	CAPACITOR(SMD)	22n	1	C35
5286547302	CAPACITOR(SMD)	47n	1	C26
6444013200	REED RELAY	G6S-2-Y	4	K1,K2,K3,K6
6502049800	CONNECTOR	B2B-PH-K-RED	1	J6
6502050200	CONNECTOR	B6B-PH-K-RED	1	J5
6502050400	CONNECTOR	B8B-PH-K-RED	1	J7
6504007000	16PIN HEADER	2567P16UD00	1	J4
6611575900	DIODE	1N4005	5	D8,D11,D12,D13,D14
6612575200	DIODE	1N60	2	D9,D10
6613576409	DIODE(SMD)	1N4148	8	D1,D2,D3,D6,D7,D16,D17,D18
6615406109	ZENER DIODE(SMD)	10V	1	ZD9
6615406209	ZENER DIODE(SMD)	12V	1	ZD7
6615406609	ZENER DIODE(SMD)	18V	1	ZD11
6615413709	ZENER DIODE(SMD)	5.1V	5	ZD1,ZD2,ZD5,ZD6,ZD10
6622100709	TRANSISTOR(SMD)	A14	1	Q9
6622100809	TRANSISTOR(SMD)	A42	1	Q7
6622101300	TRANSISTOR	A92	3	Q5,Q6,Q11
6622250800	TRANSISTOR	BC546B	2	Q2,Q4
6622400800	TRANSISTOR	TIP48	2	Q1,Q3
6624260200	TRANSISTOR(SMD)	8550	1	Q8
6640150500	PHOTOCOUPLER	PC817	3	PH1,PH4,PH5
6640402800	CURRENT SENSOR	MA91000045	1	CS1

TIC PART NO	DESCRIPTION	SIZE	QM	SYMBOL
6646202019	BILATERAL SWITCH	TC7S66F	1	U2
6655006000	TELPHONE IC	AS2534	1	U1
6699001202	RESONATOR	3.58MHz	1	X1
6839000600	COMMON CHOKE	TBC-4TX2	1	LP1
6911002600	JACK	JACK 6P6C	2	J1,J2
6982006000	VARISTOR	TNR12G391K	2	AR1,AR2
6982006300	VRRISTOR	10N221K	1	AR3

8.6 Power Supply Part List

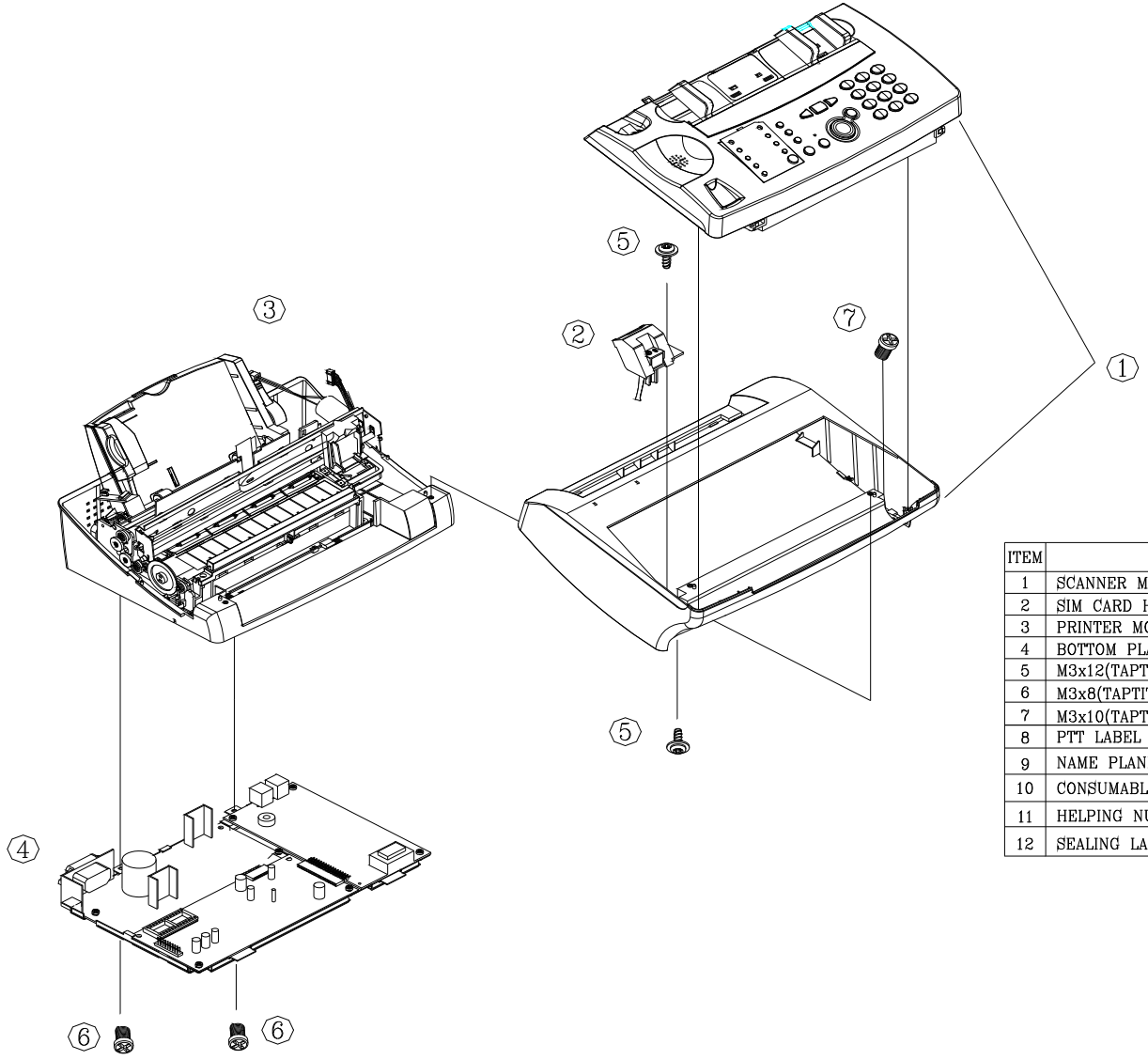
TF-300P (Vienna 1) P/N: 6930011900

Item	Symbol	Part No.	Description
1	J6	100-0652-	JUMPER WIRE JUMPER 7.5mm
2	J7	100-0652-	JUMPER WIRE JUMPER 7.5mm
3	J3	100-0752-10	JUMPER WIRE JUMPER 10mm
4	J1	100-0752-12	JUMPER WIRE JUMPER 12.5mm
5	J2	100-0752-15	JUMPER WIRE JUMPER 12.5mm
6	J4	100-0752015	JUMPER WIRE JUMPER 15mm
7	J5	100-0752-15	JUMPER WIRE JUMPER 15mm
8	R13	131-1499-	PRECI. RESISTOR 4K99 1% 1/
9	R12	131-1511	PRECI. RESISTOR 5K11 1% 1/
10	R15	141-0033-	CR25 RESISTOR 33R 1/4W
11	R9	141-0110-	CR25 RESISTOR 100R 1/4W
12	R6	141-0168	CR25 RESISTOR 680R 1/4W
13	R7	141-0251-	CR25 RESISTOR 5K1 1/4W
14	R3	141-0339-	CR25 RESISTOR 39K 1/4W
15	R3A	141-0339-	CR25 RESISTOR 39K 1/4W
16	R3B	141-0339-	CR25 RESISTOR 39K 1/4W
17	R3C	141-0339-	CR25 RESISTOR 39K 1/4W
18	R12A	141-0422-	CR25 RESIISTOR 220K 1/4W
19	R13A	141-0422-	CR25 RESISTOR 220K 1/4W
20	R5	141-0430-	CR25 RESISTOR 300K 1/4W
21	R2	142-0447-	CR50 RESISTOR 470K 1/2W
22	R19	151-0847-	MF RESISTOR 4R7 1W
23	R24	151-0847-	MF RESISTOR 4R7 1W
24	R25	152-0068-	MF RESISTOR 68R 2W
25	R17	152-0115-	MF RESISTOR 150R 2W
26	R26	152-0115-	MF RESISTOR 150R 2W
27	R14	152-0218-	MF RESISTOR 1K8 2W
28	R27	152-0218-	MF RESISTOR 1K8 2W
29	R4	152-F110-	MF RESISTOR 100R 2W
30	R8	161-K918	WW RESISTOR 0R18 1W
31	VA1	181-N470-	VARISTOR
32	R1	190-1010-	THERMISTOR 10R
33	C18	202-L112-	EL CAPACITOR LXF 120u 25V
34	C19	202-L112-	EL CAPACITOR LXF 120u 25V
35	C16	202-L112	EL CAPACITOR LXF 120u 25V

Item	Symbol	Part No.	Description
36	C17	202-L122-	EL CAPACITOR LXF 220u 25V
37	C14	202-L133-	EL CAPACITOR LXF 330u 25V
38	C15	202-L133-	EL CAPACITOR LXF 330u 25V
39	C9	203-L056-	EL CAPACITOR LXF 56u 35V
40	C12	203-L139-	EL CAPACITOR LXF 390u 35V
41	C13	203-L139-	EL CAPACITOR LXF 390u 35V
42	C10	205-F010-	EL CAPACITOR KMF 10u 50V
43	C25	205-F010-	EL CAPACITOR KMF 10u 50V
44	C25	205-F010-	EL CAPACITOR KMF 10u 50V
45	C11	205-K810-	EL CAPACITOR KRE 1u 50V
46	C5	240-0058-	EL CAPACITOR SMG 68u 400V
47	C1A	250-D410-	X CAPACITOR 104
48	C1	250-D447-	X CAPACITOR 474
49	C2	259-M233-	Y CAPACITOR 332
50	C3	259-M233-	Y CAPACITOR 332
51	C4	249-M233-	Y CAPACITOR 332
52	C7	260-W210	CAPACITOR 1000PF
53	C8	260-W4100-	CAPACITOR 0.1u
54	C15A	270-T433-	MEF CAPACITOR 0.33u
55	C21	281-0147-	CER CAPACITOR 470PF 1KV
56	C24	285-0310-	CER CAPACITOR 10000PF 500V
57	L5	320-6108-	INDUCTOR 1.9Uh
58	L4	320-6110-	Inductor 2.5Uh
59	L6	320-6110-	Inductor 2.6Uh
60	L7	320-R390-	INDUCTOR TAPPING
61	T1	360-2950-	ZENER DIODE 82V 6W
62	L3	390-L006-	C-M CHOKE
63	DB1	410-BP08-	BRIDGE DIODE KBP08
64	DZ2	430-C4V7-	ZENER DIODE 4V7 0.4W
65	DZ1	435-S82V-	ZENER DIODE
66	D7	450-095C-	FR DIODE 1A5 600VDC
67	D5	450-3DF4-FC	FR DIODE 3A 400VDC
68	D3	450-3DF4-M	FR DIODE 3A 400VDC
69	D3A	450-3DF4-M	FR DIODE 3A 400VDC
70	D2	450-R103-	FR DIODE 1A 200VDC
71	D6	450-R103-	FR DIODE 1A 200VDC
72	D4	460-3110-M	SCHOTTKY DIODE 3A 100V

Item	Symbol	Part No.	Description
73	Q1	500-2843-	TRANSISTOR
74	IC5	699-7912-	IC
75	IC1	699-7912-	IC
76	IC2	699-C123-	IC
77	IC3	699-L431-	IC
78	TB2	710-9908-L	PIN HEADER
79	TB4	710-LS02-	PIN HEADER
80	TB3	710-PH06-	PIN HEADER

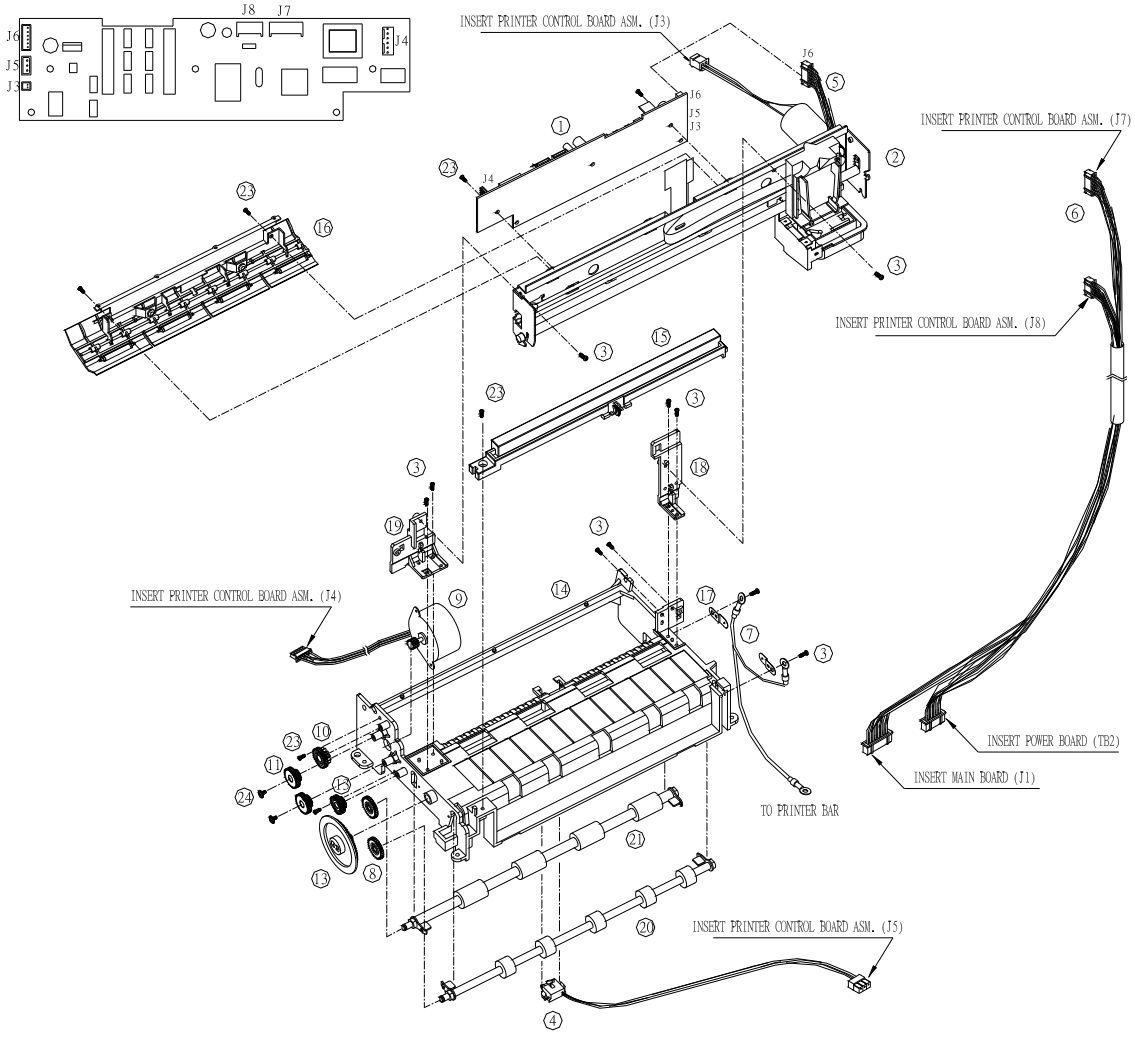
9. MECHANICAL DRAWING AND PARTS LIST



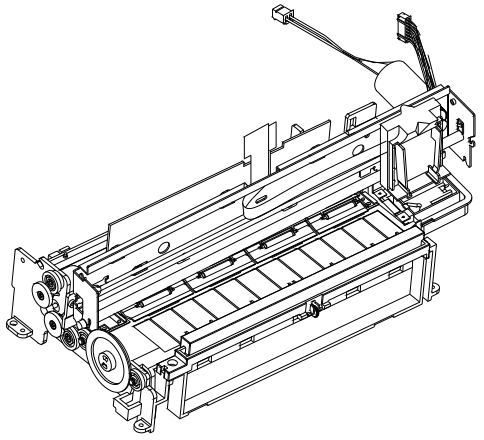
ITEM	NAME	B/M NUMBER	Q'TY
1	SCANNER MODE UNIT	0482326143	1
2	SIM CARD HOLDER ASM.	0482326130	1
3	PRINTER MODE UNIT	0482326250	1
4	BOTTOM PLATE UNIT	0482326302	1
5	M3x12(TAPTITE CAP SCREW,P TYPE)	7136161682	2
6	M3x8(TAPTITE SCREW P TYPE)	7131161182	2
7	M3x10(TAPTITE SCREW P TYPE)	7131161482	1
8	PTT LABEL	0482304410	1
9	NAME PLANE	0482304359	1
10	CONSUMABLES LABEL	0482304518	1
11	HELPING NUMBER LABEL	0482304514	1
12	SEALING LABEL	0482304513	1

FACSIMILE UNIT
1999.09.09

① PRINTER CONTROL BOARD ASM.

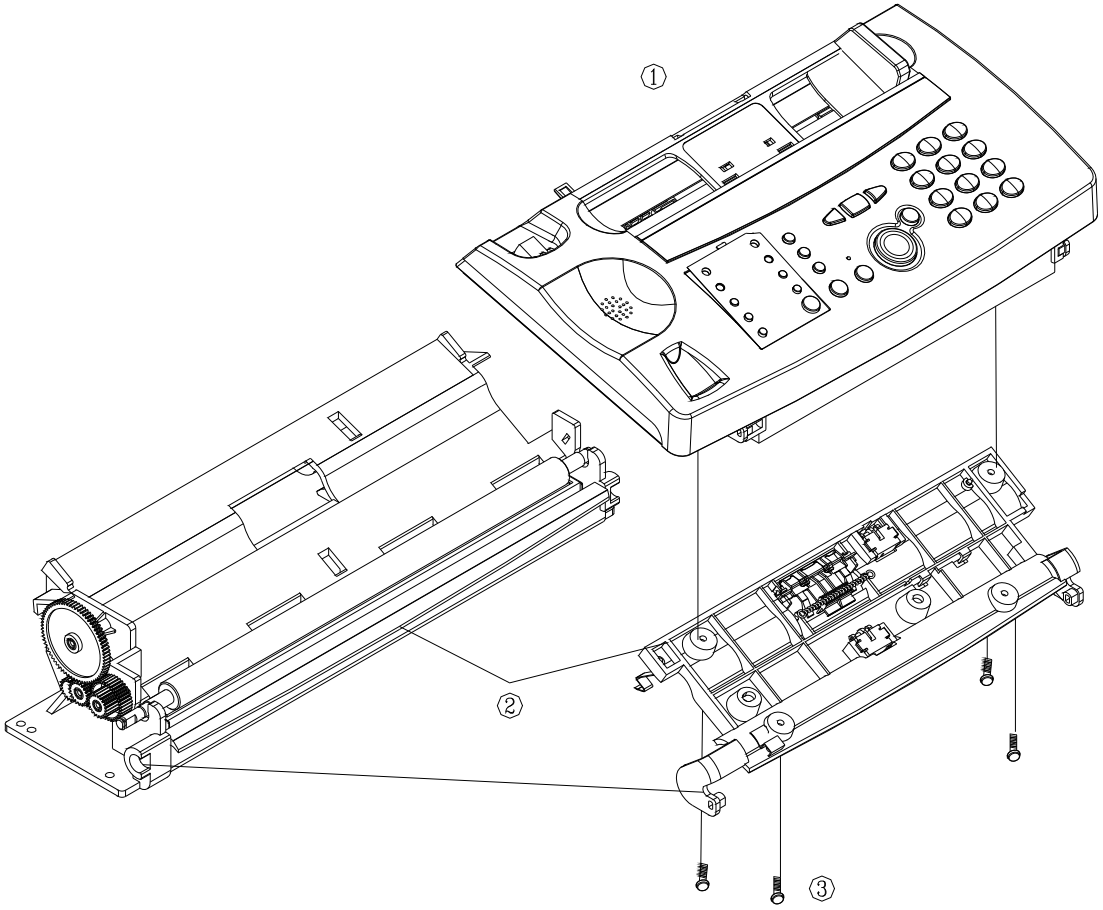


ITEM	NAME	B/M NUMBER	Q'TY
1	PRINTER CONTROL BOARD ASM.	0482325040	1
2	PRINTER BAR (HP GPB3)	0482325601	1
3	M3X6(TPATITE SCREW,P TYPE)	7131160682	9
4	PAPER READY SENSOR	0482325402	1
5	CABLE ASM.(Drop Detect)(6P)	0482325404	1
6	CABLE ASM.(To M/B)(8P)	0482325423	1
7	GROUND WIRE(PBAR-PR)	0482325425	1
8	DRIVE ROLLER GEAR	0482325616	2
9	PAPER MOTOR	0482325590	1
10	GEAR A	0482325612	1
11	GEAR B	0482325613	2
12	GEAR C	0482325614	1
13	GEAR D	0482325615	1
14	BASE FRAME	0482325600	1
15	WHEEL-SUPPORT ASM.	0482326105	1
16	PAPERGUIDE ASM.	0482326100	1
17	GROUND SPRING	0482325597	2
18	BRACKET-BF-L	0482325599	1
19	BRACKET-BF-R	0482325598	1
20	EXIT ROLLER ASM.	0482325724	1
21	DRIVER ROLLER ASM.	0482325722	1
22	M3X8(TPATITE SCREW,P TYPE)	7131161182	1
23	M3X6(TPATITE SCREW,S TYPE)	7131160652	6
24	M2.6X5(TPATITE SCREW,P TYPE)	7136130582	2



BASE FRAME UNIT (PRINTER)

88.09.09

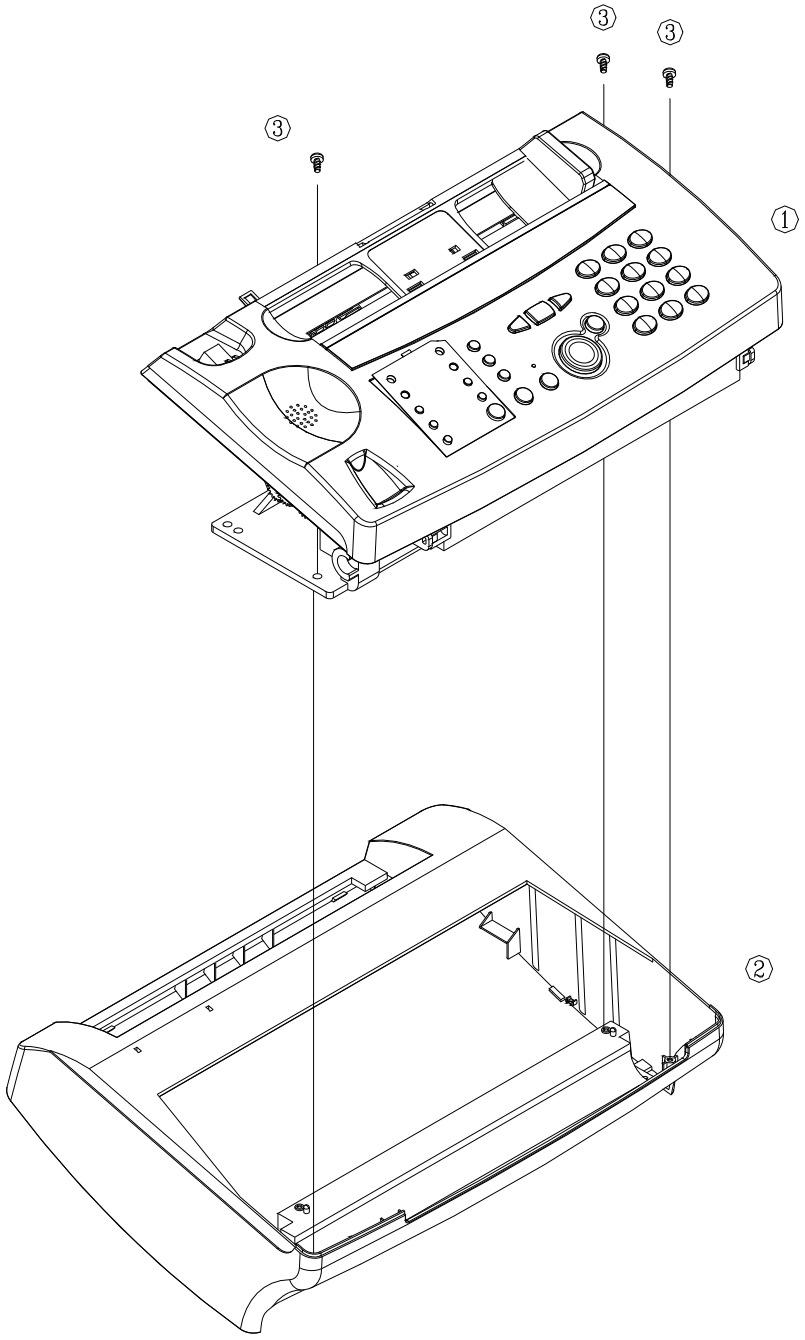


ITEM	NAME	B/M NUMBER	Q'TY
1	O/P UNIT	0482326200~49	1
2	SCANNER UNIT	0482326047	1
3	TAPPING SCREW(M3x8)	7131161182	4

PART DIFFERENTIAL LIST

DWG/NO	O/P COLOR	CUSTOMER	ASM
0482326110	SLIVER GRAY	TF-300P	0482326140
0482326111	BLACK	TELIA DELPH 22	0482326141
0482326112	DARK GRAY	BT(PAPERJET 100)	0482326142
0482326113	SLIVER GRAY	OFFICE 3000	0482326143
0482326114	SLIVER GRAY	MASTER-VIENNA	0482326144
0482326115	SLIVER GRAY	OKIFAX510 ENGLISH	0482326145
0482326116	SLIVER GRAY	OKIFAX510 FREHCH	0482326146
0482326117	SLIVER GRAY	OKIFAX510 GERMAN	0482326147
0482326118	SLIVER GRAY	OKIFAX510 DANISH	0482326148
0482326119	SLIVER GRAY	OKIFAX510 LTALY	0482326149

SCANNER MODE ASM.
1999.09.13

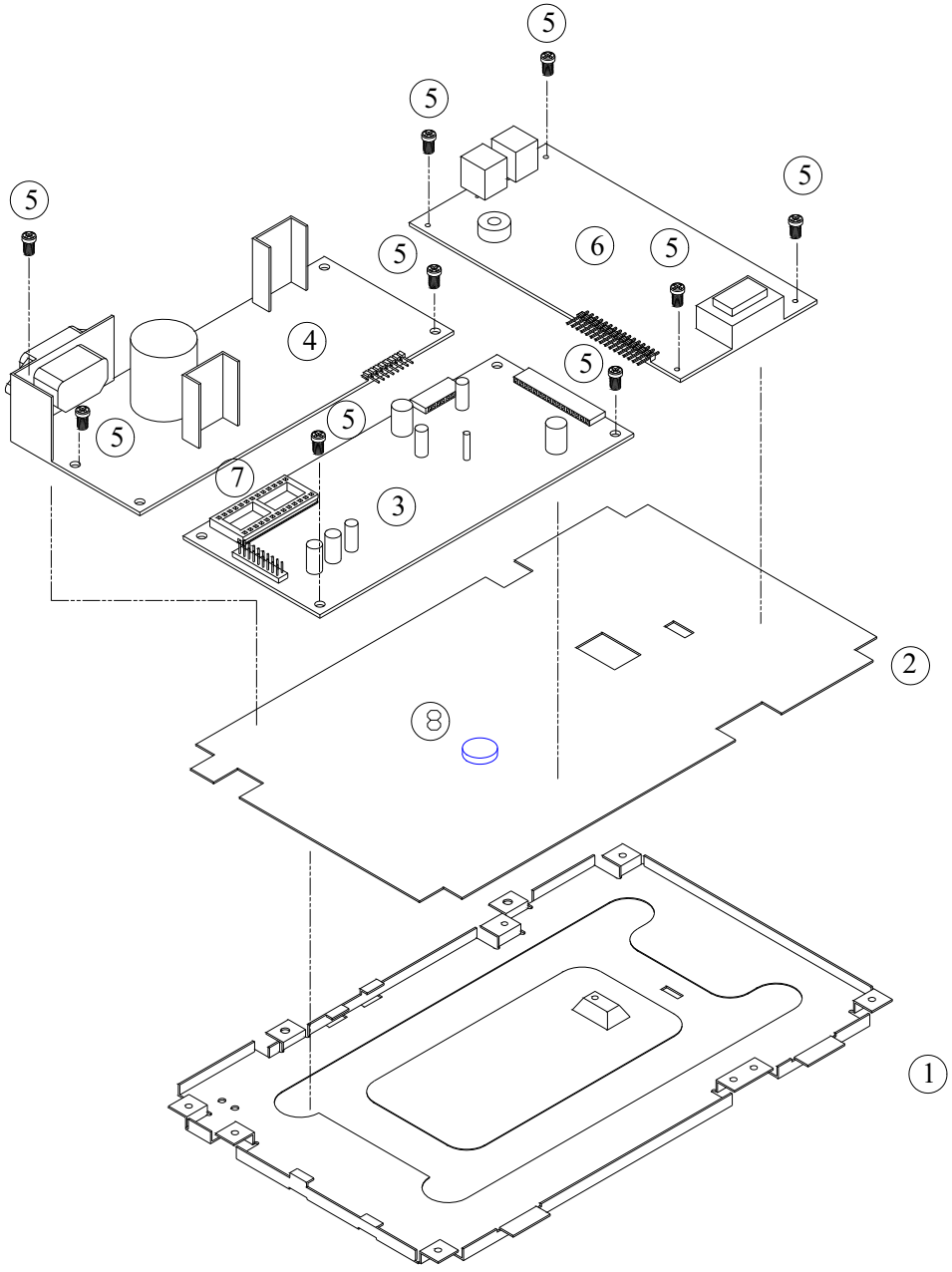


ITEM	NAME	B/M NUMBER	Q'TY
1	SCANNER MODE ASM.	0482326110~19	1
2	UPPER COVER UNIT	0482326150~52	1
3	TAPPING SCREW(M3x8)	7131161182	3

PART DIFFERENTIAL LIST

DWG/NO	CUSTOMER /COLOR	ASM
0482326140	尚志30724	0482326700
0482326141	TELIA DELPHI 22	0482326703
0482326142	BT(PAPER JET 100)	0482326704
0482326143	OFFICE 3000	0482326713
0482326144	VIENNA	0482326714
0482326145	OKIFAX 510 ENGLISH	0482326715
0482326146	OKIFAX 510 FREHCH	0482326705
0482326147	OKIFAX 510 GERMAN	0482326706
0482326148	OKIFAX 510 DANISH	0482326711
0482326149	OKIFAX 510 LTALY	0482326709

SCANNER MODE UNIT
1999.09.13

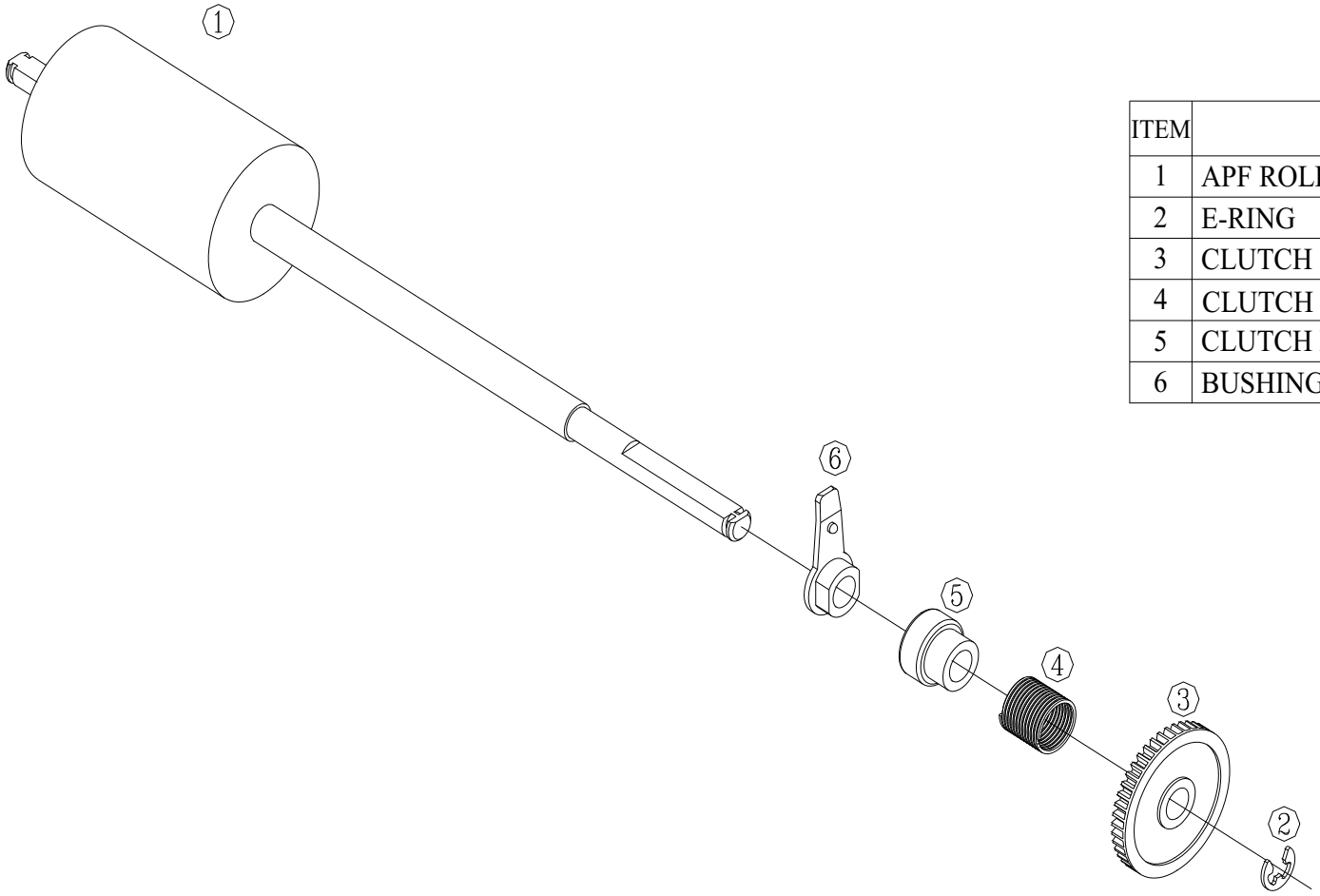


ITEM	NAME	B/M NUMBER	Q`TY
1	BOTTOM-PLATE	0482325649	1
2	INSULATION SHEET	0482325617	1
3	MAIN BOARD ASM	0482325010~11	1
4	SWITCHING POWER	6930011600	1
5	TAPTITE SCREW(M3x6)	7131160652	9
6	NCU BOARD ASM	0482325310~16	1
7	27C1001 EPROM ASM	0482325800~99	1
8	RUBBER LEG	0482350250	1

PART DIFFERENTIAL LIST

DWG/NO.	COLOR\CUSTOMER	ASM
0482326301	TELIA DELPHI 22	0482326503
0482326302	OFFICE 3000 ITALY	0482326519
0482326303	PAPERJET 100	0482326510
0482326304	OKIFAX 510 DUTCH	0482326516
0482326305	OKIFAX 510 DANISH	0482326517
0482326306	OKIFAX 510 ITALY	0482326515
0482326307	OKIFAX 510 PORTUGAL	0482326514
0482326308	OKIFAX 510 GERMANY	0482326512
0482326309	OKIFAX 510 ENGLISH	0482326505
0482326310	OKIFAX 510 FRENCH	0482326511

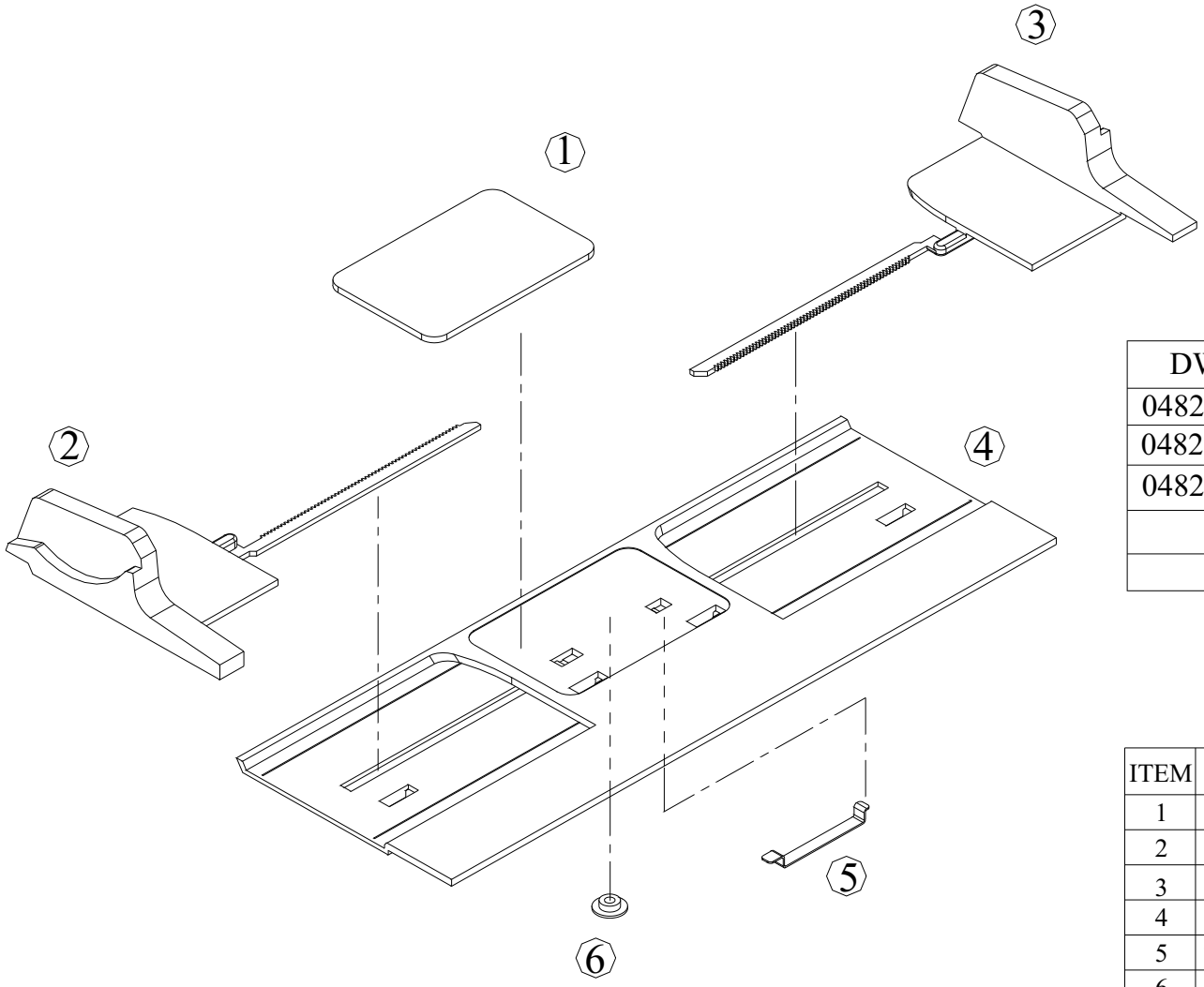
BOTTOM PLATE UNIT
1999.09.09



ITEM	NAME	B/M NUMBER	Q'TY
1	APF ROLLER	0482326053	1
2	E-RING	7105300302	1
3	CLUTCH GEAR	0482311321	1
4	CLUTCH SPRING	0482340632	1
5	CLUTCH BUSHING	0482311322	1
6	BUSHING	0482350401	1

ADF ROLLER ASM.

1999.09.13

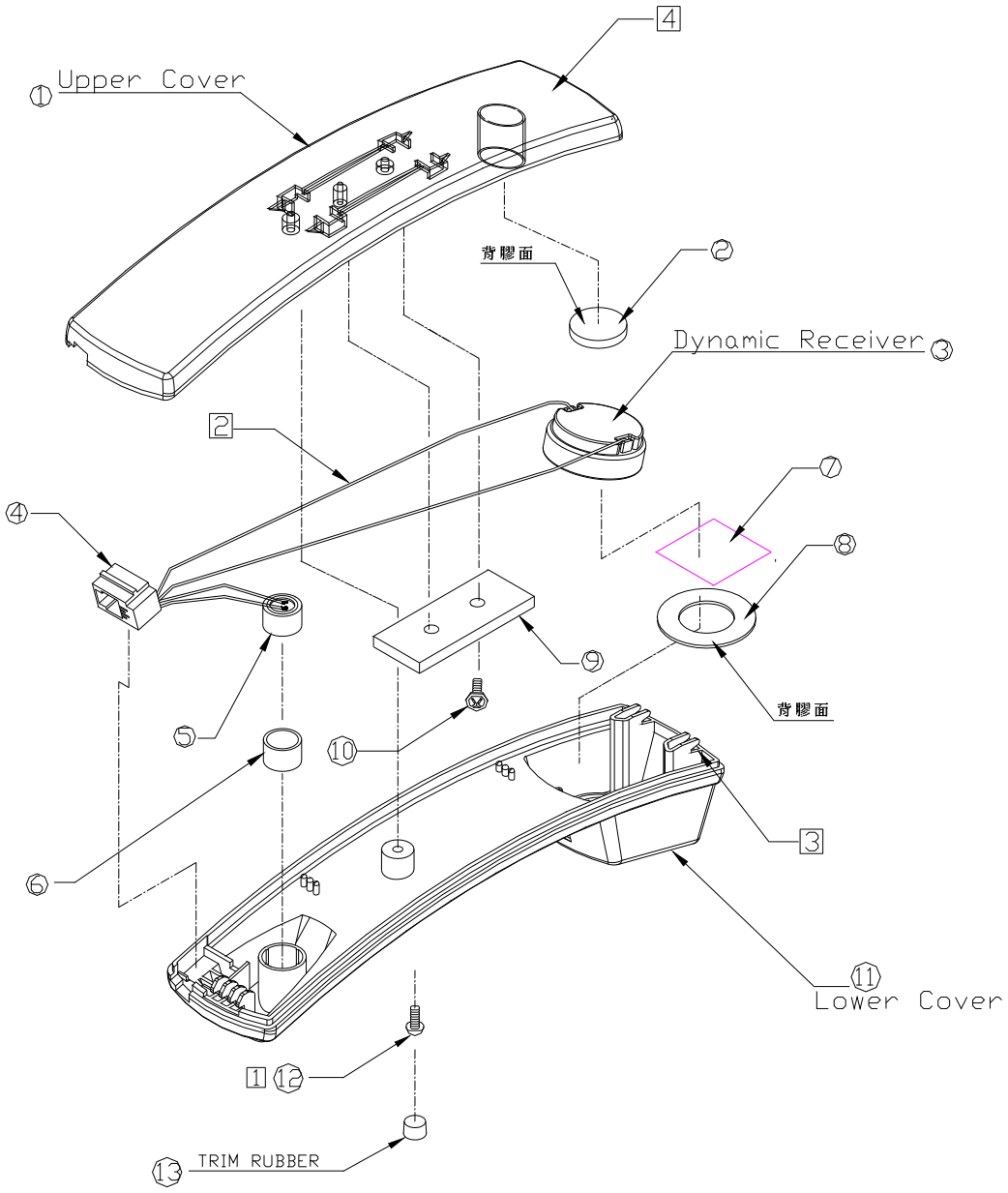


PART DIFFERENTIAL LIST

DWG/NO.	COLOR	CUSTOMER	ASM
0482325740	尚志30724	OKI	0482326200
0482325741	尚志4681	TELIA	0482326201
0482325742	尚志4704	BT	0482326210

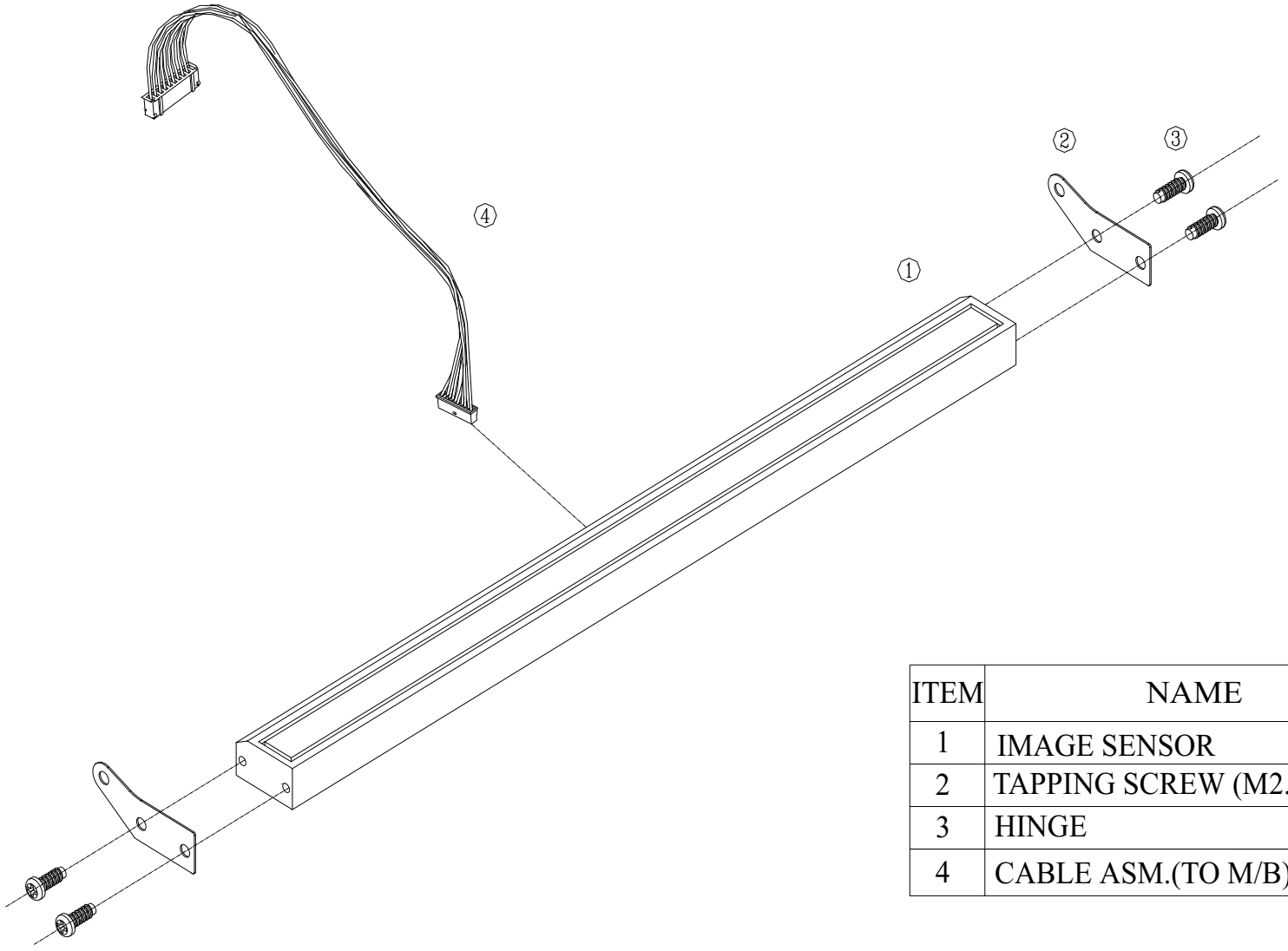
ITEM	NAME	B/M NUMBER	Q'TY
1	DOC. SETTING LABEL	0482304509	1
2	DOC. GUIDE (LEFT)	0482325650~2	1
3	DOC. GUIDE (RIGHT)	0482325655~7	1
4	DOC. BRACKET	0482325660~2	1
5	SETTING SPRING	0482323557	1
6	SPUR GEAR	0482323556	1

DOC. GUIDE ASM.
1999.09.10



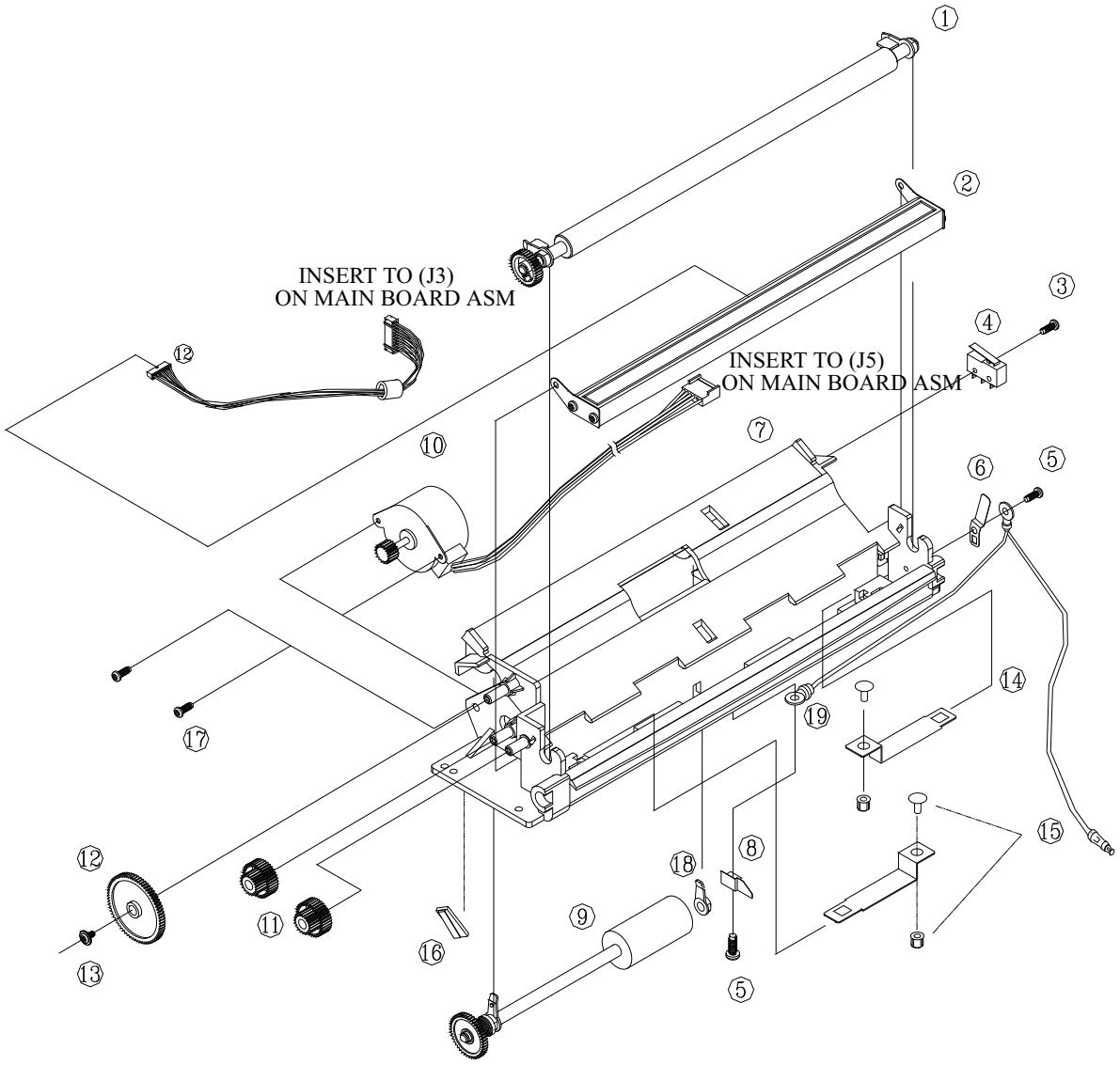
ITEM	NAME	B/M NUMBER	Q'TY
1	UPPER COVER	0482325670	1
2	EVA(Ø18Xt3)	0482356579	1
3	DYNAMIC RECEIVER(DM-270E)	6002000800	1
4	SOCKET-616E	0482300601	1
5	MICRO PHONE(WM-034DH)	6901000700	1
6	MIC HOLDER(D12 H8 NR)	0482352011	1
7	CLOTH-GAUZE(D30 t0.25)	0482352003	1
8	EVA(Ø31XØ17.5Xt1)	0482356578	1
9	LEAD(50*20*t4)	0482352006	1
10	PAN HEAD P-TYPE(M3X8 附固定平華司)	7136161182	1
11	LOWER COVER	0482325675	1
12	PAN HEAD TAPPING SCREW(M3X8)	7131161182	1
13	TRIM RUBBER	0482356580	1
14			

HANDSET ASM
1999.09.09



ITEM	NAME	B/M NUMBER	Q'TY
1	IMAGE SENSOR	6942003100	1
2	TAPPING SCREW (M2.6X6)	7131130682	4
3	HINGE	0482325591	2
4	CABLE ASM.(TO M/B)	0482325405	1

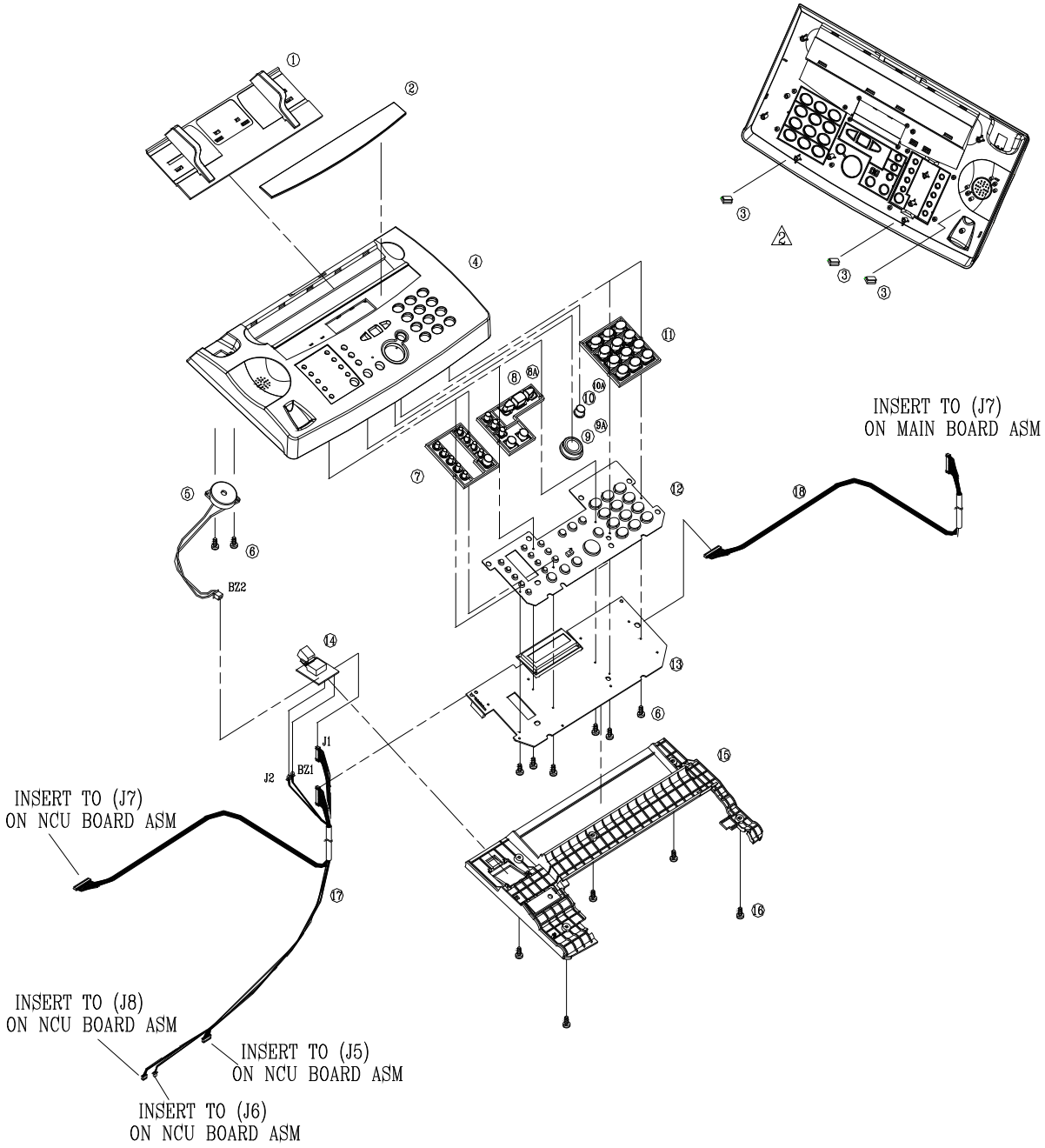
I.S. ASM.
1999.09.09



ITEM	NAME	B/M NUMBER	Q'TY
1	I.S. PLATEN ASM.	0482326160~61	1
2	I.S. ASM.	0482325705	1
3	SCREW,TAPPING PAN HEAD-2(M2.3X10)	7131101482	1
4	COVER SWITCH & CABLE ASM.	0482325420	1
5	TAPPING SCREW(M3X6)	7131160682	2
6	GROUND SPRING	0482345518	1
7	LOWER FRAME	0482325575	1
8	GROUND SPRING A	0482326055	1
9	ADF ROLLER ASM.	0482325745~54	1
10	I.S. MOTOR	0482325430	1
11	MOTOR DRIVER GEAR(36/20)	0482300045	2
12	DRIVER GEAR(70/20)	0482311370	1
13	SPECIAL TAPPING SCREW(M2.6X5)	7136130582	1
14	FLAT SPRING -I.S.	0482325592	2
15	SNAP RIVET	0482321900	2
16	TIE MOUNTS	0482315575	1
17	TAPTITE SCREW(M3X6)	7131160652	2
18	BUSHING	0482350401	1
19	GROUND WIRE(IS ROLLER)	0482325422	1

LOWER FRAME UNIT (SCANNER)

1999.09.13

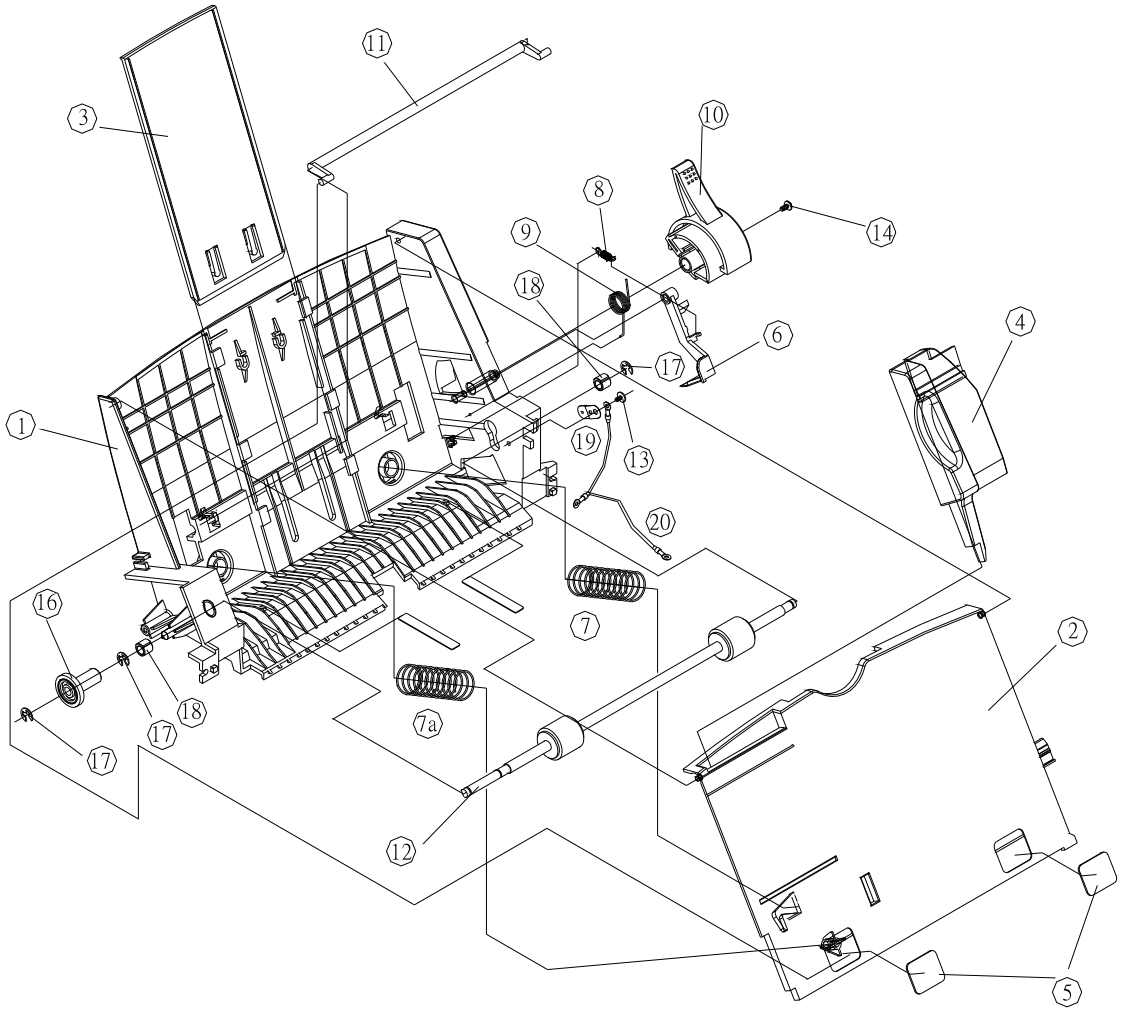


ITEM	NAME	B/M NUMBER	Q'TY
1	DOC GUIDE ASM.	0482325740~43	1
2	DISPLAY PANEL S/S	0482325950~79	1
3	TIE MOUNTS	0482315575	3
4	OPERATION PANEL S/S	0482325900~14	1
5	BUZZER	6900001401	1
6	TAPTITE SCREW PTYPE(M2X6)	7131070582	12
7	FACILITY KEY	0482325560~62	1
8	FUNCTION KEY	0482325500~02	1
8A	FUNCTION KEY (S/S) (BT專用)	0482326095	1
9	START KEY/COPY	0482326030~33	1
9A	START KEY/COPY (S/S) (BT專用)	0482326085	1
10	STOP KEY	0482325540~43	1
10A	STOP KEY (S/S) (BT專用)	0482326090	1
11	NUMBER KEY S/S	0482325530~33	1
12	KEY PAD	0482325528	1
13	KEY BOARD PCB ASM.	0482325025	1
14	HOOK ASM.	0482325305~6	1
15	OP BRACKET	0482325525	1
16	TAPTITE SCREW PTYPE(M3X8)	7131161182	5
17	CABLE ASM(K/B TO HOOK,N/B TO K/B)	0482325414~15	1
18	CABLE ASM.(K/B TO M/B)	0482325416	1

PART DIFFERENTIAL LIST

DWG/NO.	COLOR	CUSTOMER	ASM
0482326200	SLIVER GRAY	TF-300P	0482326110
0482326201	BLACK	TELIA DELPHI	0482326111
0482326202	SLIVER GRAY	OKIFAX510 ENGLISH	0482326115
0482326203	SLIVER GRAY	OKIFAX510 FREHCH	0482326116
0482326204	SLIVER GRAY	OKIFAX510 GERMAN	0482326117
0482326205	SLIVER GRAY	OKIFAX510 DANISH	0482326118
0482326206	SLIVER GRAY	OKIFAX510LTALY	0482326119
0482326207	SLIVER GRAY	OKIFAX510 DUTCH	0482326173
0482326208	SLIVER GRAY	OKIFAX510 PORTUGAL	0482326174
0482326209	SLIVER GRAY	OFFICE 3000	0482326113
0482326210	DARK GRAY	BT(PAPERJET 100)	0482326112
0482326211	SLIVER GRAY	OKIFAX510 SPAMISH	0482326175
0482326212	SLIVER GARY	MASTER-VIENNA	0482326114
0482326213	SLIVER GRAY	OKIFAX510 NORWAY	0482326176

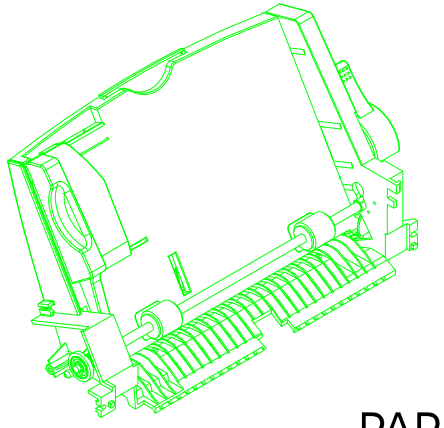
O/P UNIT
1999.09.13



ITEM	NAME	B/M NUMBER	Q'TY
1	FRAME-APF	0482326000~02	1
2	PLATE-KNOCK UP	0482326005~07	1
3	PAPER SUPPORT	0482326010~12	1
4	PAPER GUIDE-APF	0482326015~17	1
5	CORK PLATE	0482325624	2
6	BUCKLE CORNER(R)	0482325636	1
7	SPRING-KNOCK UP(R)	0482325625	1
7a	SPRING-KNOCK UP(L)	0482325626	1
8	SPRING-BUCKLE CORNER	0482325627	1
9	SPRING-HANDLE	0482325628	1
10	HANDLE	0482325629~31	1
11	LINKAGE SHAFT	0482325637	1
12	PICK UP ROLLER ASM.	0482325728	1
13	M2.6X5(TPATITE SCREW,P TYPE)	7136130582	1
14	M3X6(TPATITE SCREW,P TYPE)	7136160682	1
15	MYLAR-APF	0482325595	2
16	PICK ROLLER CLUTCH (STEEL)	0482325607	1
17	E-RING DET#4	7105300402	3
18	SINTERING BEARING	0482325647	2
19	GROUND SPRING	0482325597	1
20	GROUND WIRE	0482325422	1

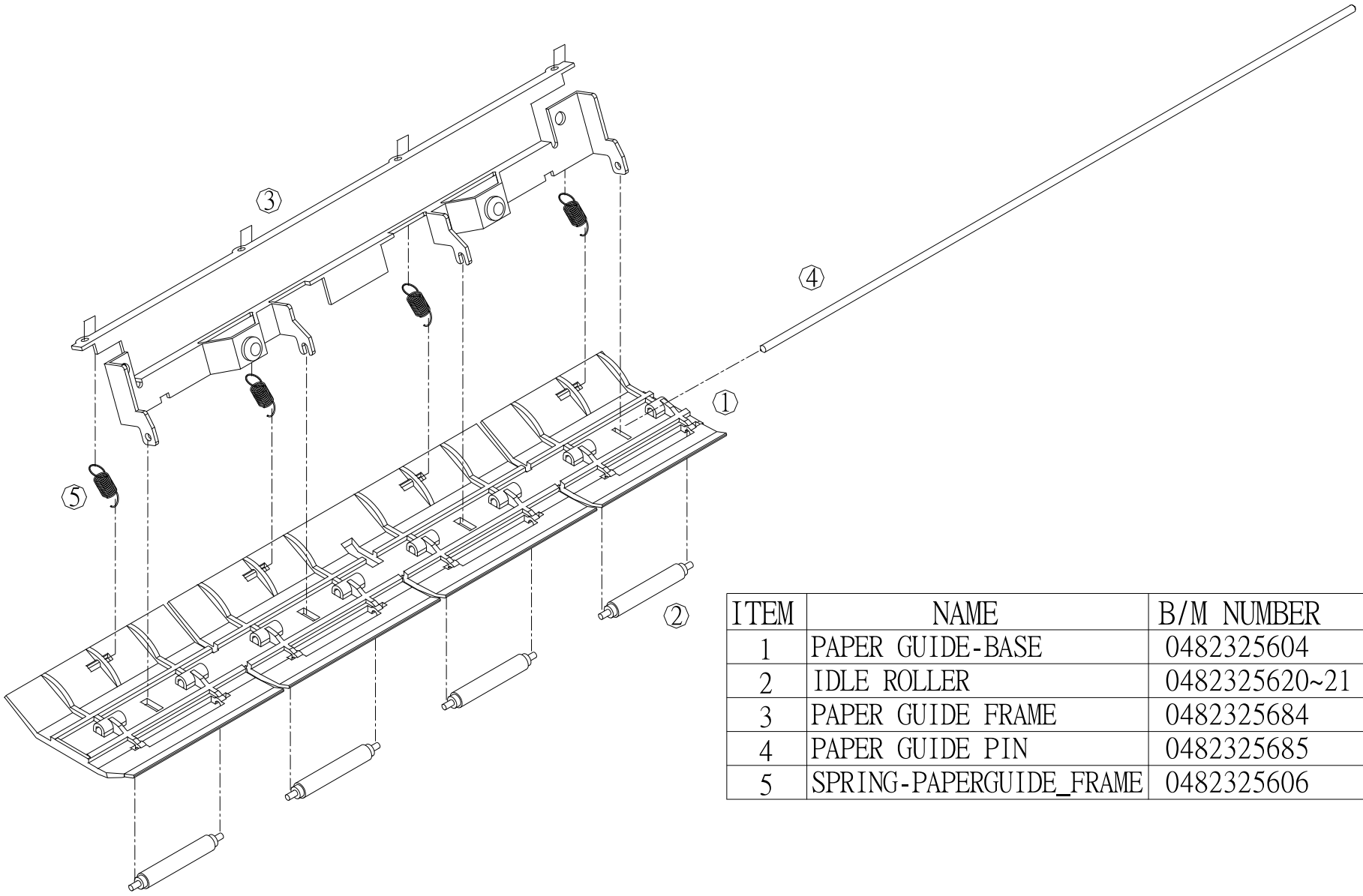
PART DIFFERENTIAL LIST

DWG/NO.	COLOR	CUSTOMER	RELEASED FOR ASM
0482325730	尚志 30724	OKI	0482325755
0482325731	尚志 30724	TELIA	0482325756
0482325732	尚志 30724	BT	0482325757



PAPER FEEDER UNIT

1999.09.13

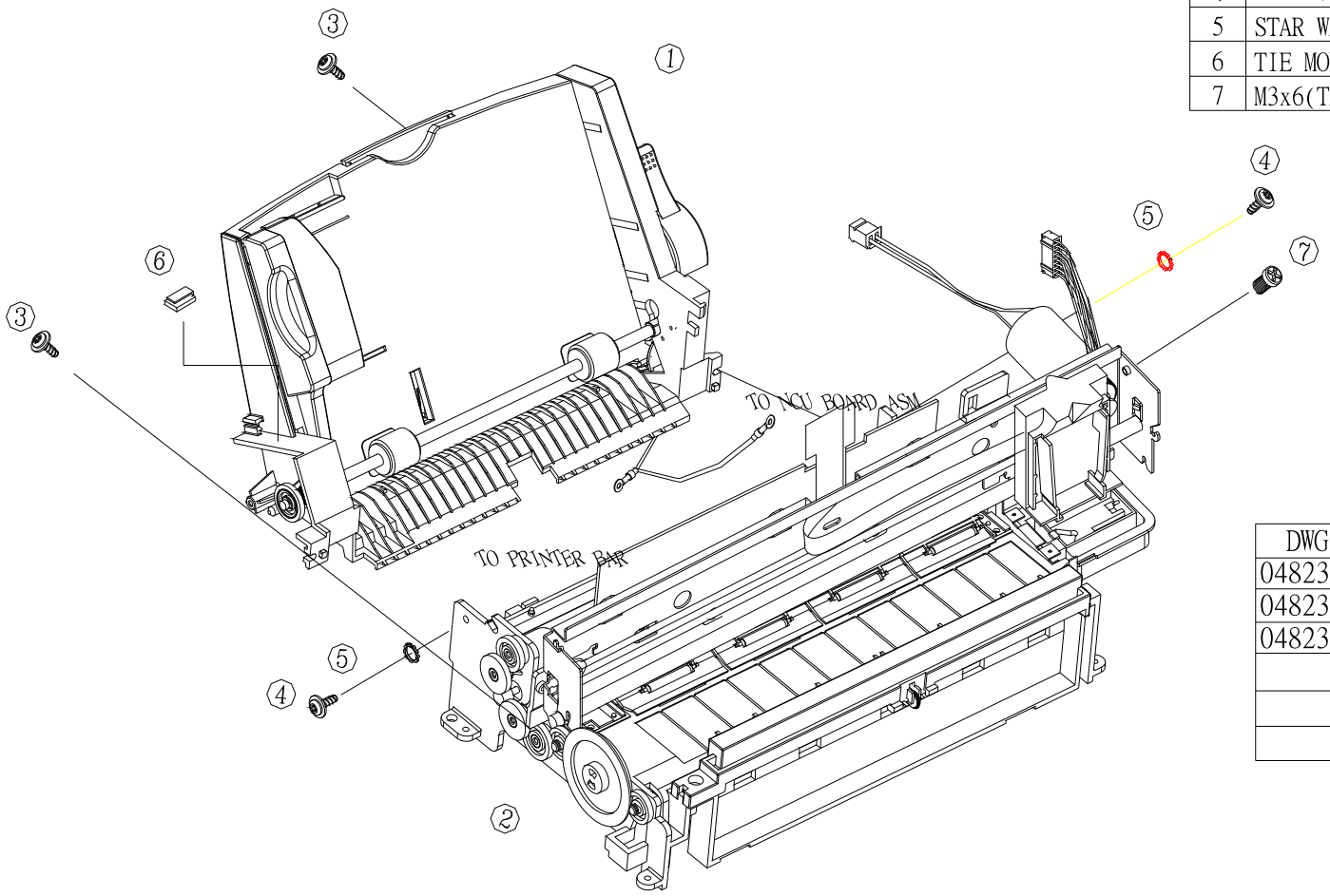


ITEM	NAME	B/M NUMBER	Q'TY
1	PAPER GUIDE-BASE	0482325604	1
2	IDLE ROLLER	0482325620~21	4
3	PAPER GUIDE FRAME	0482325684	1
4	PAPER GUIDE PIN	0482325685	1
5	SPRING-PAPERGUIDE_FRAME	0482325606	4

PAPERGUIDE ASM

1999.09.13.

ITEM	NAME	B/M NUMBER	Q'TY
1	PAPER FEEDER UNIT(PRINTER)	0482325730~32	1
2	BASE FRAME UNIT(PRINTER)	0482326170	1
3	M3x10(TAPTITE CAP SCREW,P TYTE)	7131161482	2
4	M3x14(TAPTITE CAP SCREW,P TYPE)	7138161952	2
5	STAR WASHER	7101200400	2
6	TIE MOUNTS	0482315575	1
7	M3x6(TAPTITE SCREW,S TYTE)	7131160652	1

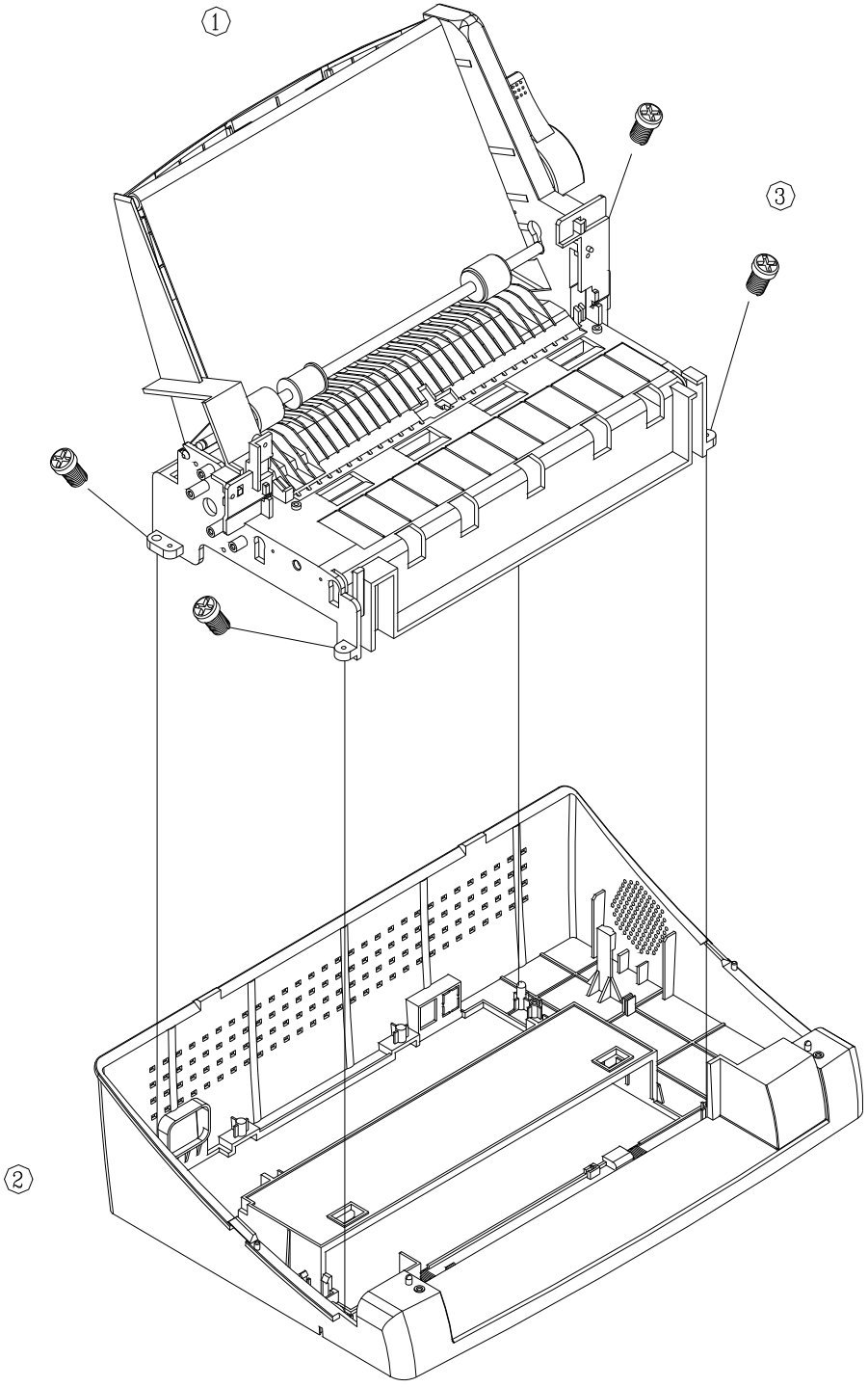


PART DIFFERENTIAL LIST

DWG/NO.	COLOR	CUSTOMER	RELEASED FOR ASM
0482325755	尚志30724	OKI	0482326250
0482325756	尚志4681	TELIA	0482326251
0482325757	尚志4704	BT	0482326252

PRINTER MODE ASM.

1999.09.10



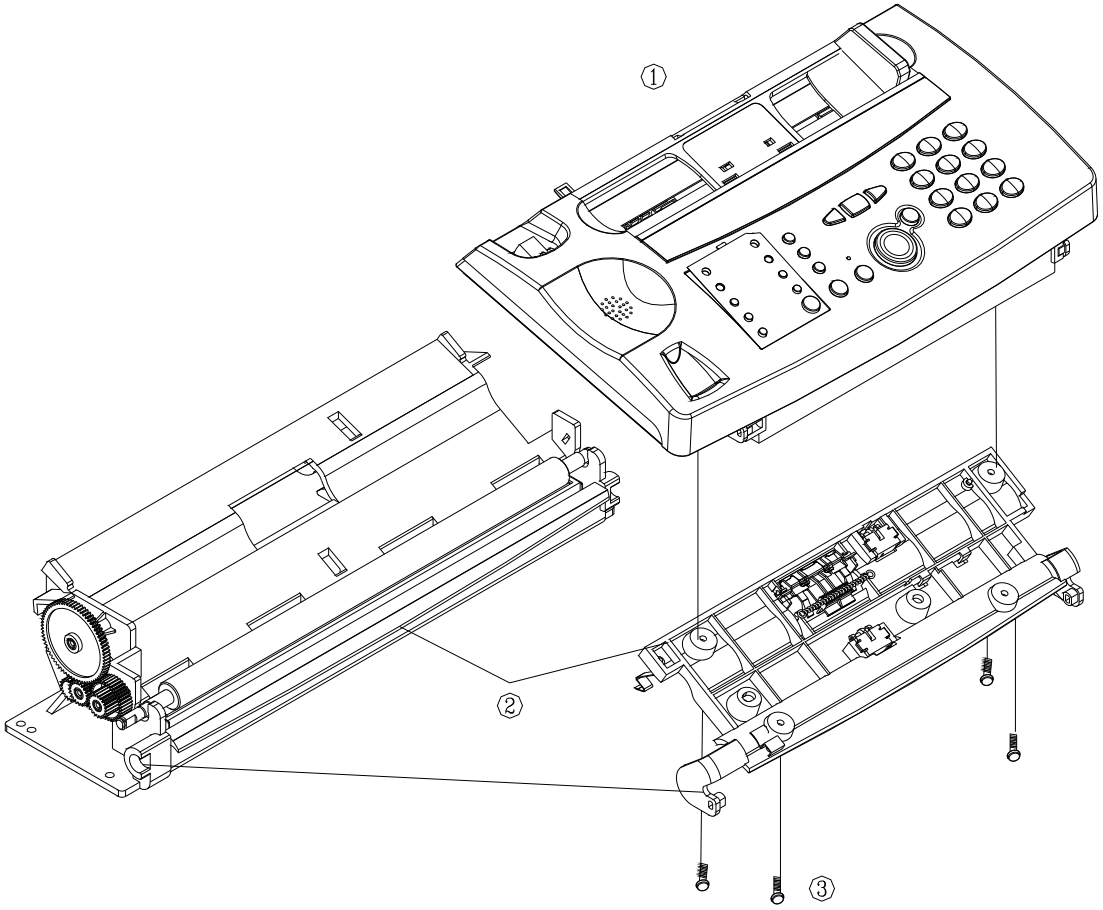
ITEM	NAME	B/M NUMBER	Q'TY
1	PRINTER MODE ASM.	0482325755~74	1
2	BOTTOM COVER UNIT	0482326120~22	1
3	M3x10(TPATITESCREW,P TYPE)	7131161482	4

PART DIFFERENTIAL LIST

DWG/NO	O/P COLOR	CUSTOMER	ASM/NO
0482326250	尚志30724	OKI	0482326700
	尚志30724	ITO(OFFICE3000)	0482326713
	尚志30724	ITO(VIENNA)	0482326714
0482326251	尚志4681	TELIA	0482326703
0482326252	尚志4704	BT	0482326704

PRINTER MODE UNIT

1999.09.13

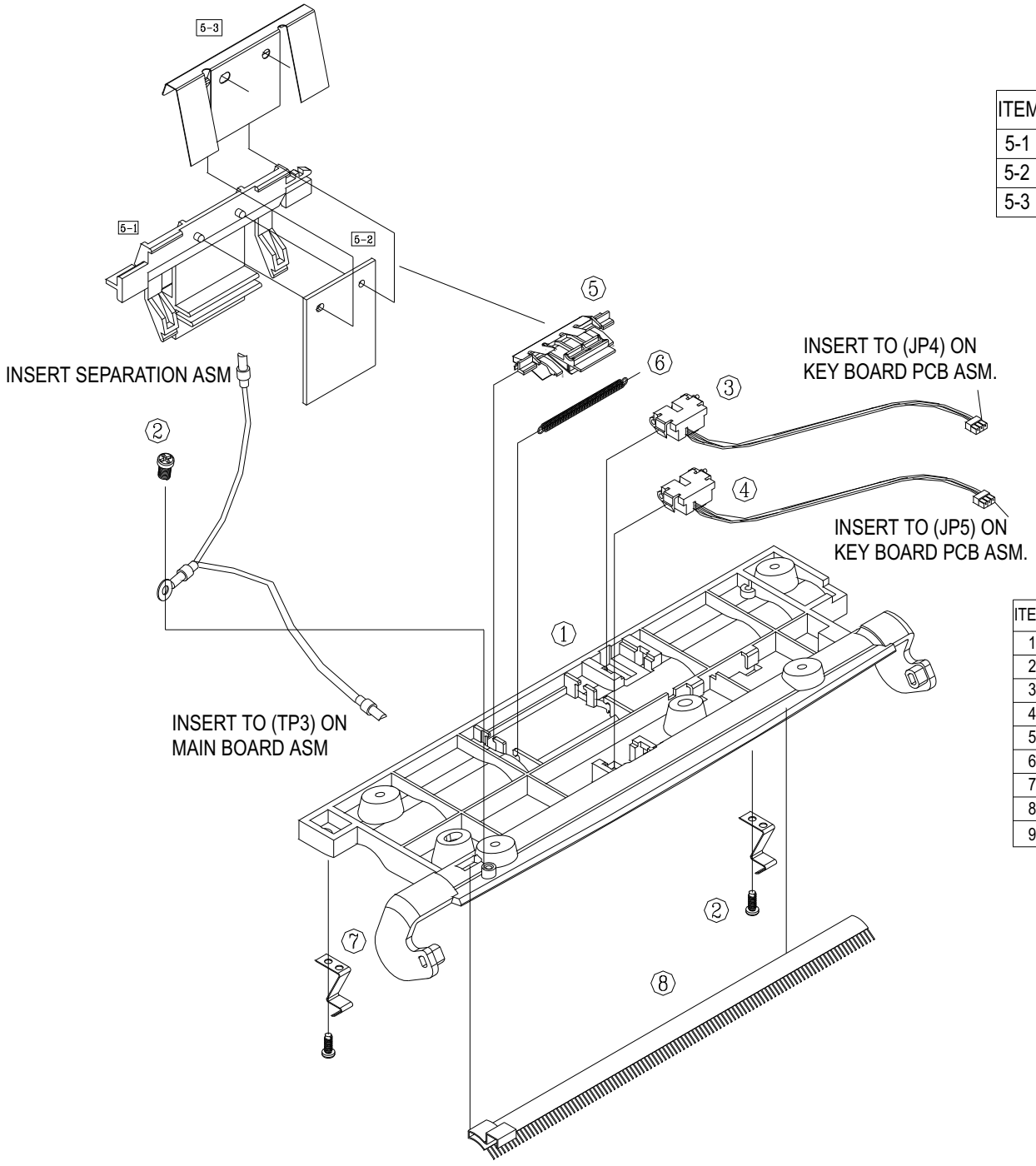


ITEM	NAME	B/M NUMBER	Q'TY
1	O/P UNIT	0482326200~49	1
2	SCANNER UNIT	0482326047	1
3	TAPPING SCREW(M3x8)	7131161182	4

PART DIFFERENTIAL LIST

DWG/NO	O/P COLOR	CUSTOMER	ASM
0482326110	SLIVER GRAY	TF-300P	0482326140
0482326111	BLACK	TELIA DELPH 22	0482326141
0482326112	DARK GRAY	BT(PAPERJET 100)	0482326142
0482326113	SLIVER GRAY	OFFICE 3000	0482326143
0482326114	SLIVER GRAY	MASTER-VIENNA	0482326144
0482326115	SLIVER GRAY	OKIFAX510 ENGLISH	0482326145
0482326116	SLIVER GRAY	OKIFAX510 FREHCH	0482326146
0482326117	SLIVER GRAY	OKIFAX510 GERMAN	0482326147
0482326118	SLIVER GRAY	OKIFAX510 DANISH	0482326148
0482326119	SLIVER GRAY	OKIFAX510 LTALY	0482326149

SCANNER MODE ASM.
1999.09.13

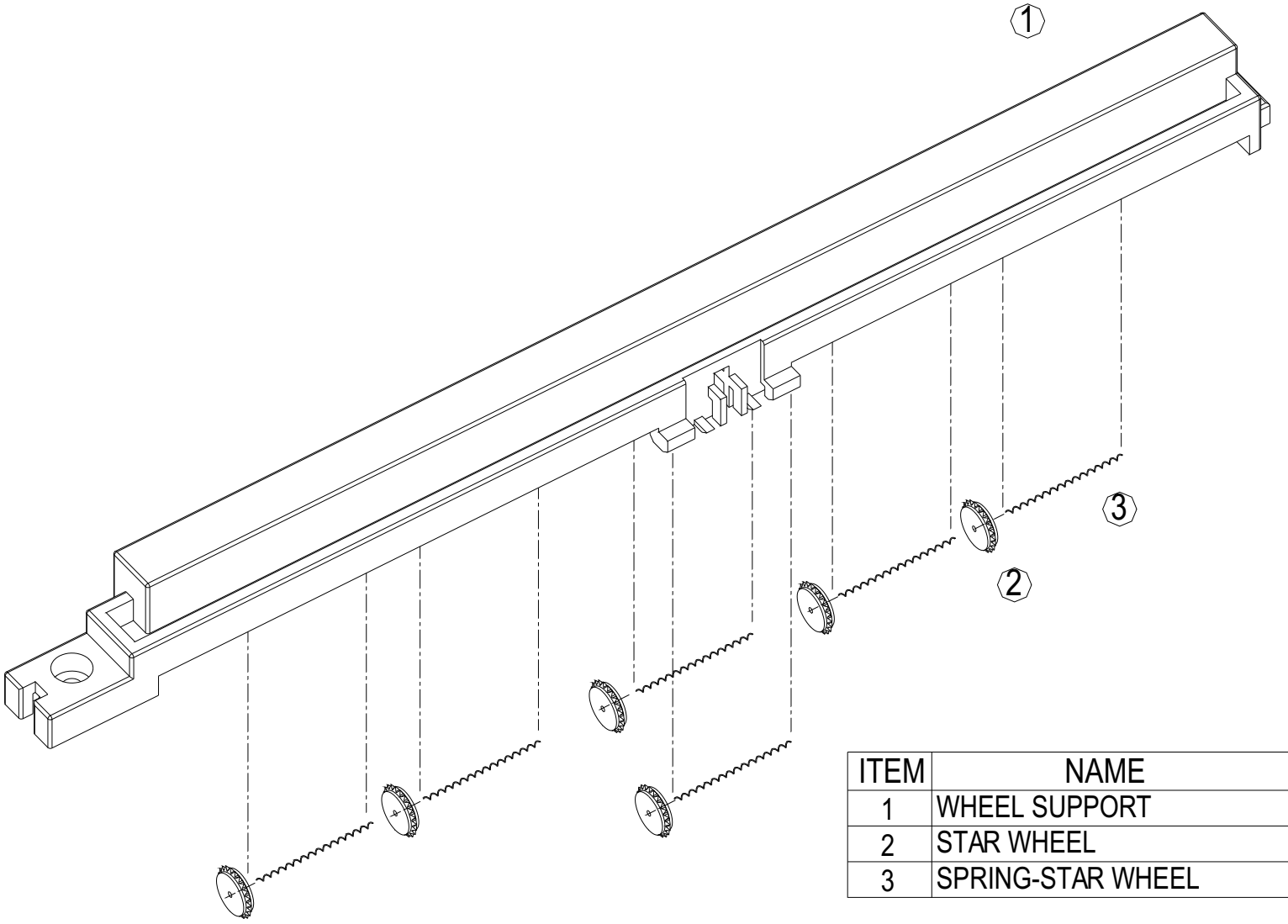


SEPARATION ASM.

ITEM	NAME	B/M NUMBER	Q'TY
5-1	BACKING PLATE-A.D.F.	0482340635	1
5-2	SEPARATION PLATE-A.D.F.	0482351230	1
5-3	CLAMPING PLATE-A.D.F.	0482325571	1

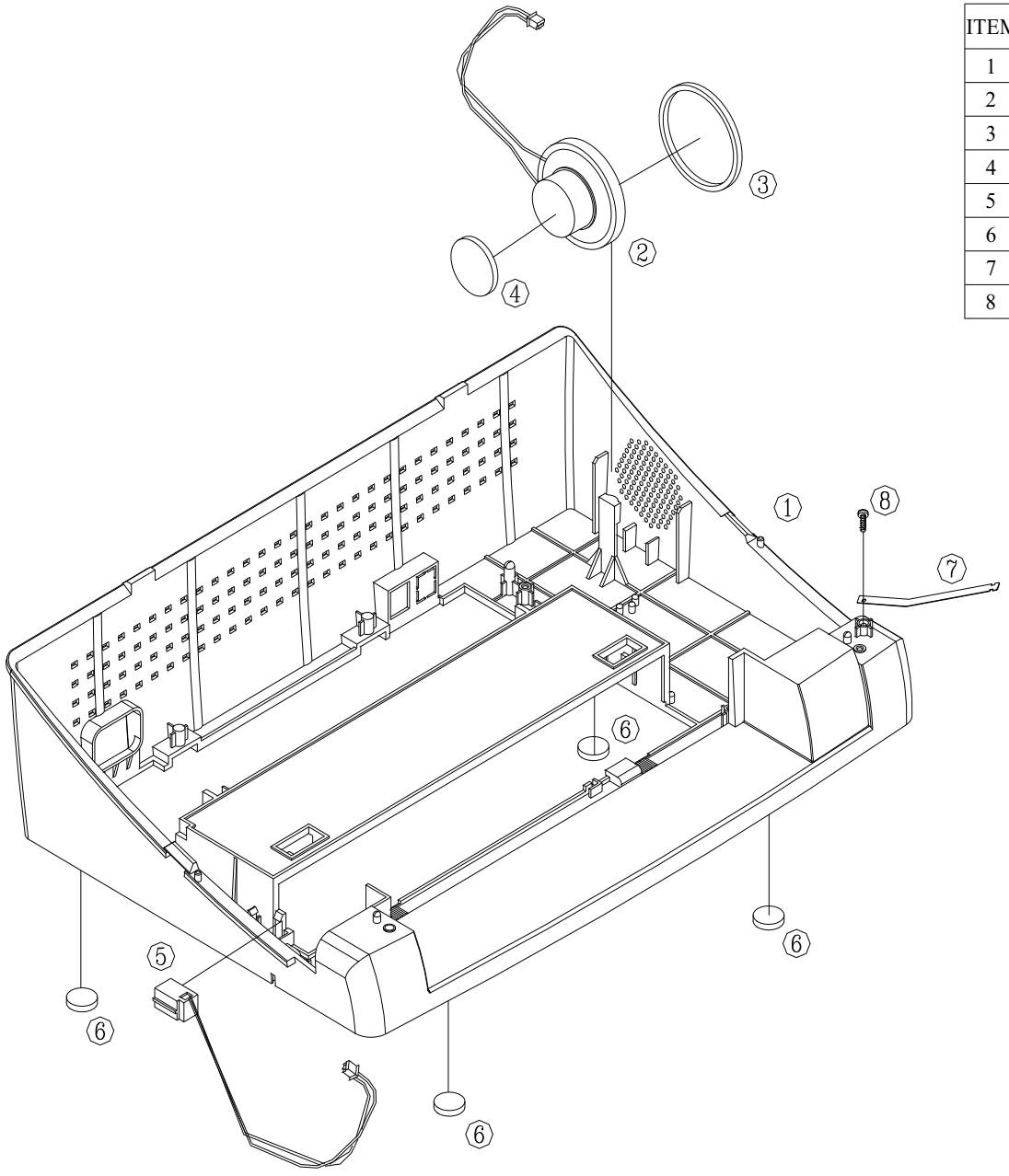
ITEM	NAME	B/M NUMBER	Q'TY
1	UPPER FRAME	0482325574	1
2	TAPPING SCREW,M3X6	7131160682	3
3	DOC. SENSOR ASM.	0482325401	1
4	A.D.F. SENSOR ASM.	0482325400	1
5	SEPARATION ASM.	0482326051	1
6	ADF EXTENSION SPRING	0482351170	1
7	SPRING HOOK	0482325580	2
8	BRUSH	0482325638	1
9	GROUND WIRE(BRUSH)	0482325421	1

UPPER FRAME UNIT (SCANNER)
1999.09.10



ITEM	NAME	B/M NUMBER	Q'TY
1	WHEEL SUPPORT	0482325605	1
2	STAR WHEEL	0482325622	6
3	SPRING-STAR WHEEL	0482325603	6

WHEEL-SUPPORT ASM.
1999.09.10



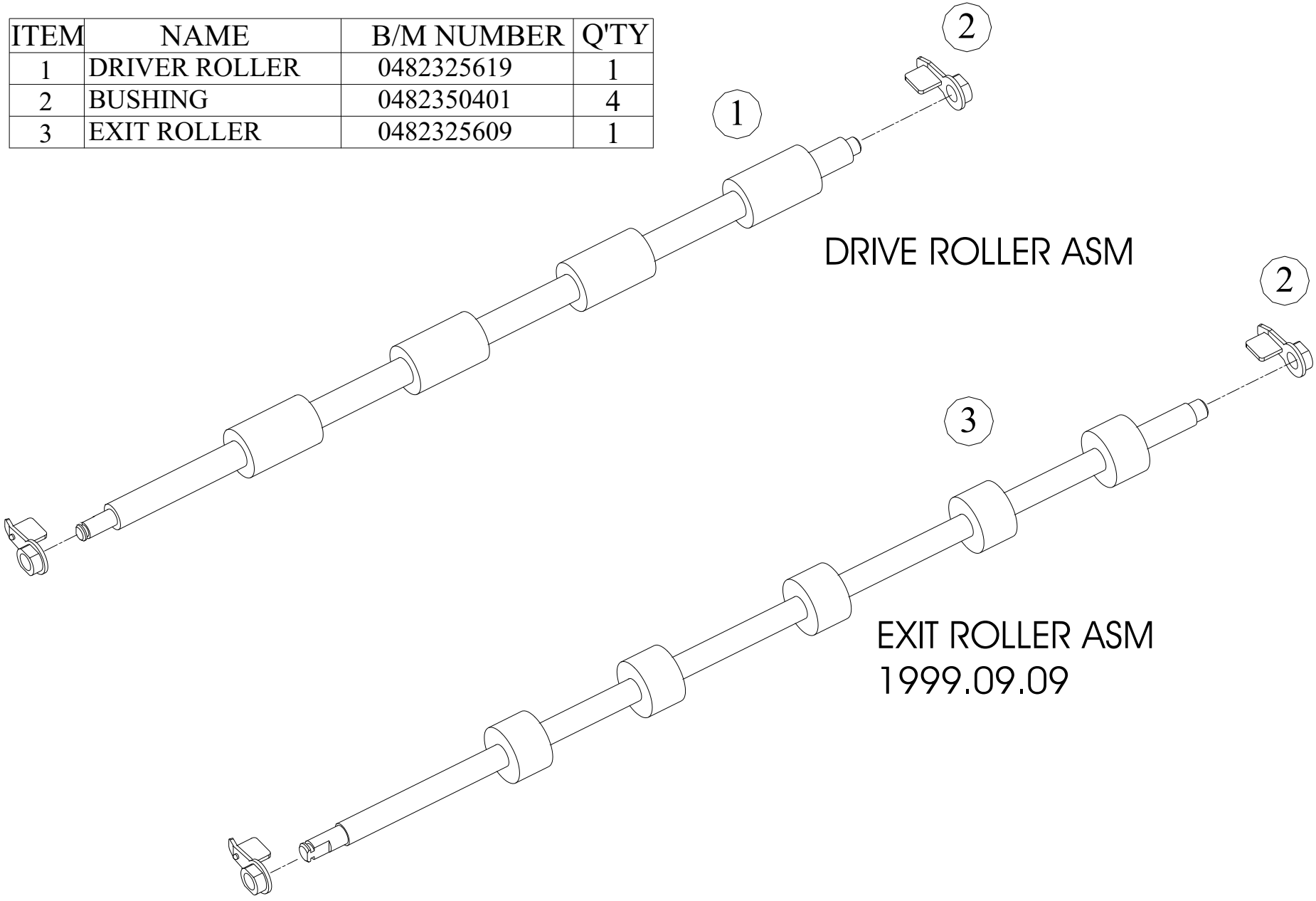
ITEM	NAME	B/M NUMBER	Q'TY
1	BOTTOM COVER	0482325640~2	1
2	SPEAKER ASM.	0482325418	1
3	EVA-SPEAKER 1	0482345937	1
4	EVA-SPEAKER 2	0482323509	1
5	SOCKER-616E CABLE ASM.	0482325413	1
6	RUBBER LEG	0482350250	4
7	PULL TIE	0482346536	1
8	M3X8(TAPTITE SCREW,P TYPE)	7136161182	1

PART DIFFERENTIAL LIST

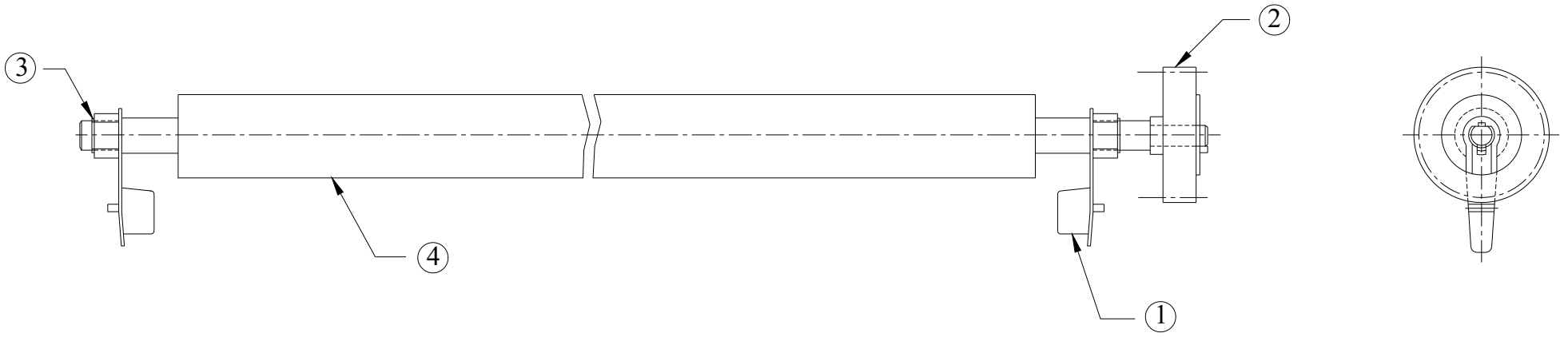
DWG/NO.	COLOR	CUSTOMER	ASM
0482326120	尚志 30724	OKI	0482326250
0482326121	尚志 4681	TELIA	0482326251
0482326122	尚志 4704	BT	0482323252

BOTTOM COVER UNIT
1999.09.09

ITEM	NAME	B/M NUMBER	Q'TY
1	DRIVER ROLLER	0482325619	1
2	BUSHING	0482350401	4
3	EXIT ROLLER	0482325609	1



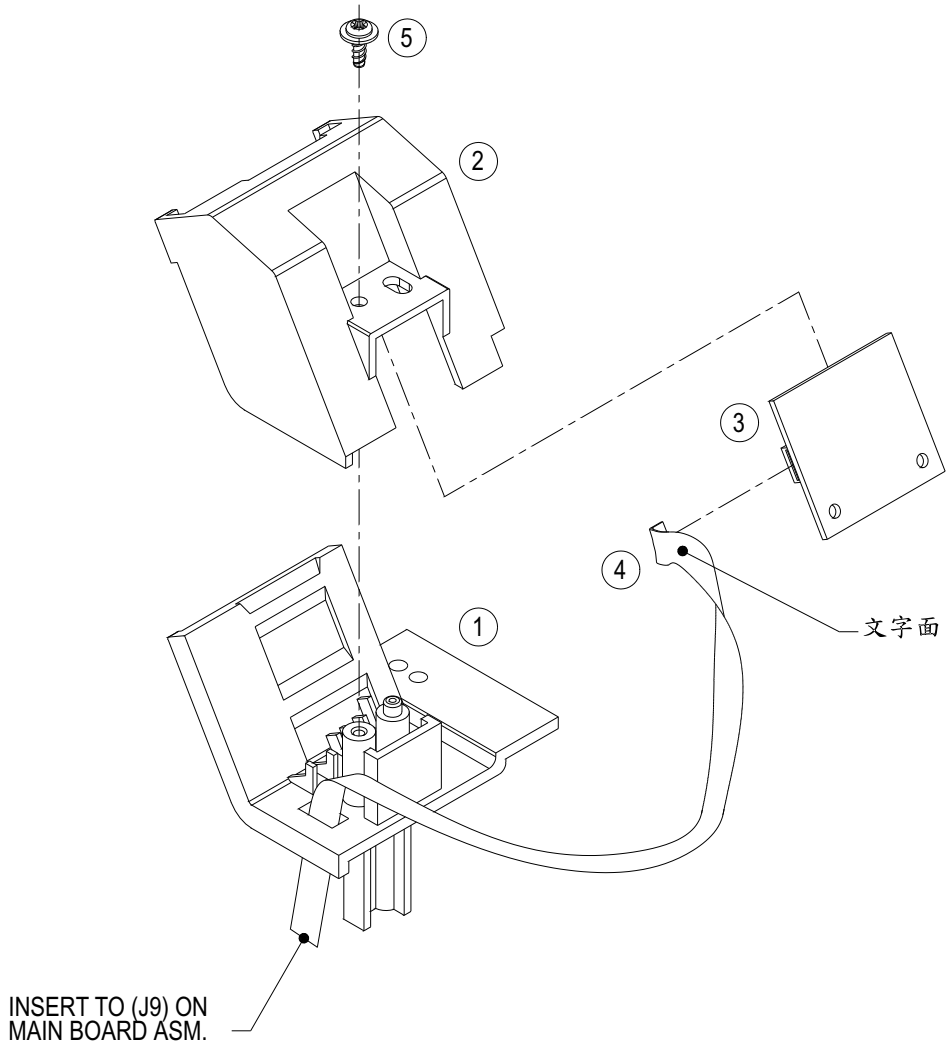
ITEM	NAME	B/M NUMBER	Q'TY
1	I.S. PLATEN BUSHING	0482350911	2
2	PLATEN GEAR	0482350920	1
3	E-RING	7105300302	2
4	I.S. PLATEN	0482326054	1

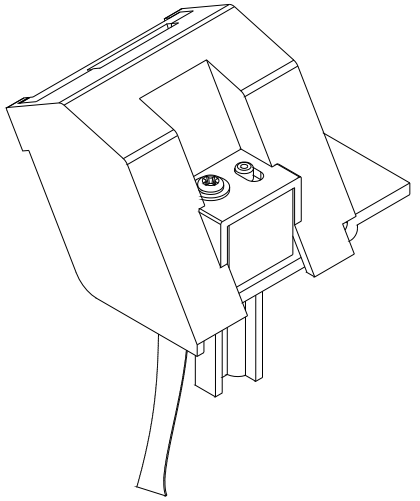


I.S. PLATEN ASM.
1999.09.13

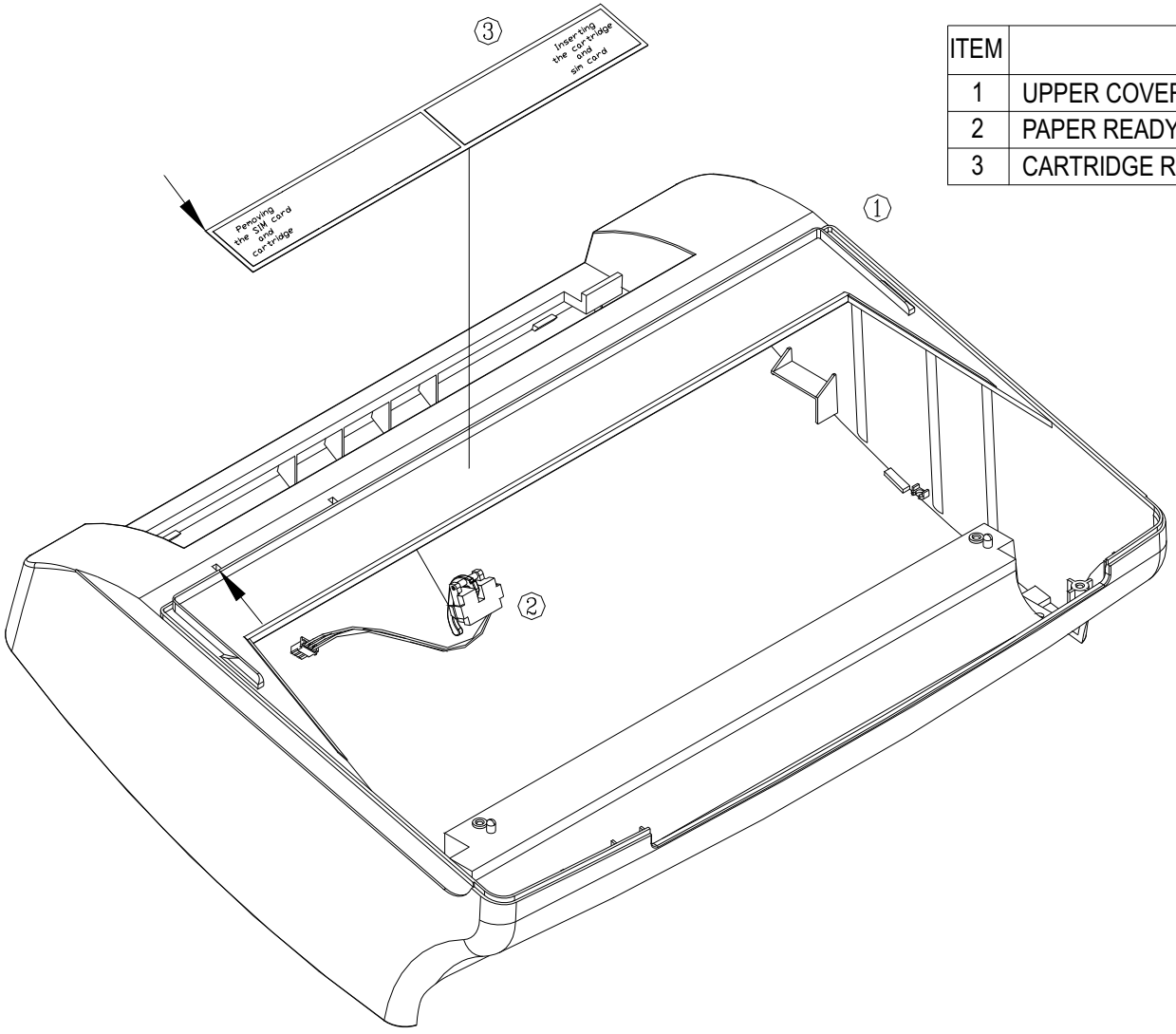
PART DIFFERENTIAL LIST

ITEM	NAME	B/M NUMBER	Q'TY	NOTE
1	SIM CARD HOLDER	0482326045	1	
2	SIM CARD COVER	0482326046	1	
3	SIM CARD PCB ASM.	0482325055	1	
4	CABLE ASM.	0482315002	1	
5	M3X8 (TAPPING CAP SCREW ,P TITE)	7136161182	1	





SIM CARD HOLDER ASM.
1999.09.10

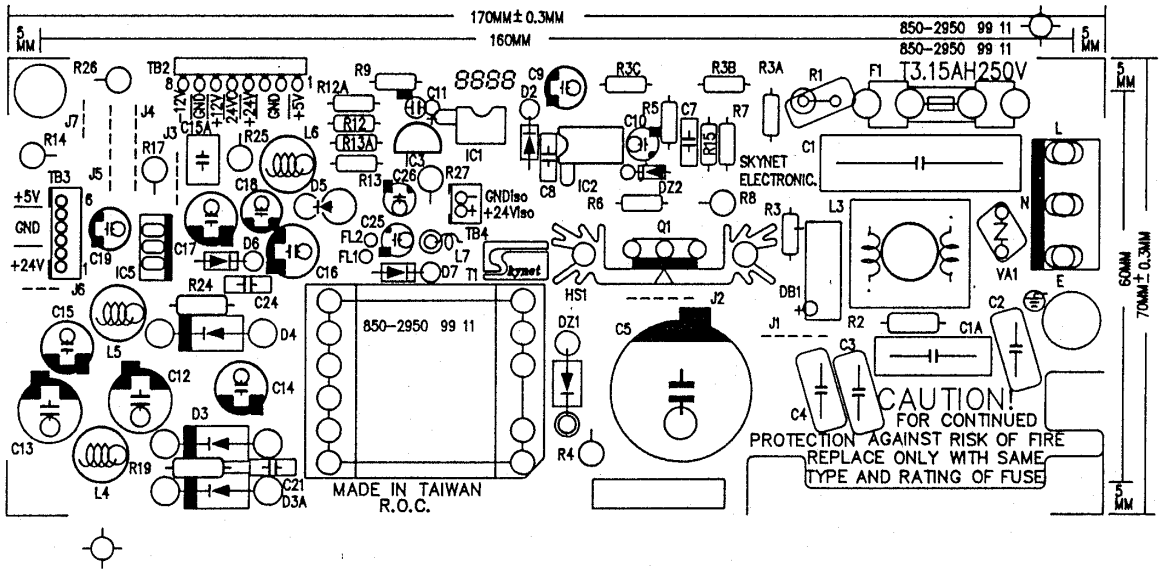


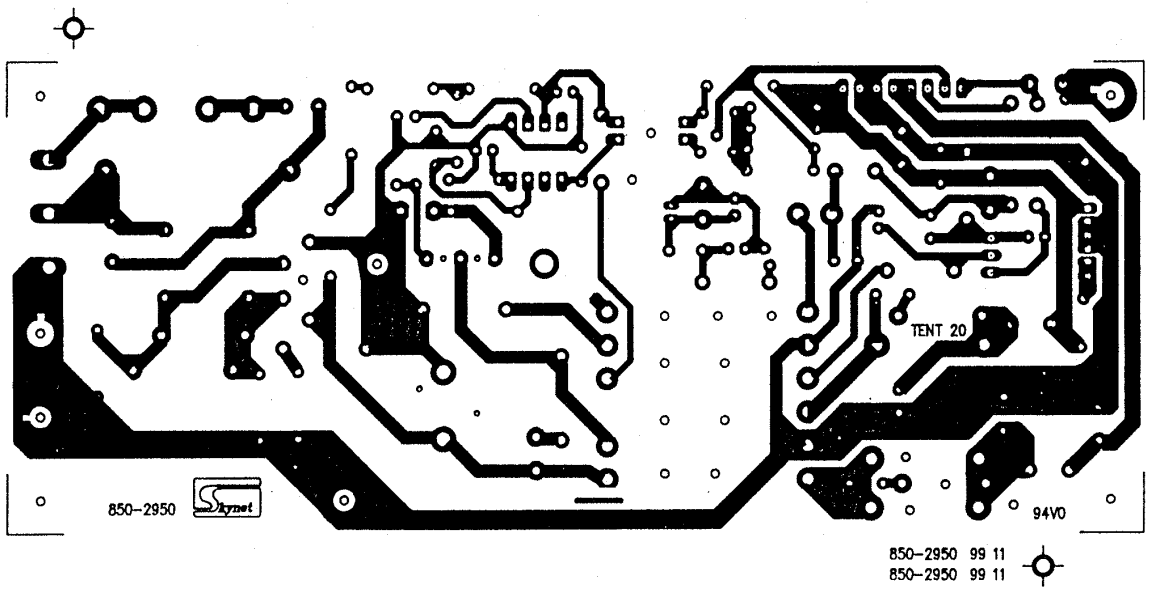
ITEM	NAME	B/M NUMBER	Q'TY
1	UPPER COVER	0482325587	1
2	PAPER READY SENSOR ASM.	0482325403	1
3	CARTRIDGE REPLACE LABEL	0482304523	1

UPPER COVER UNIT
1999.09.10

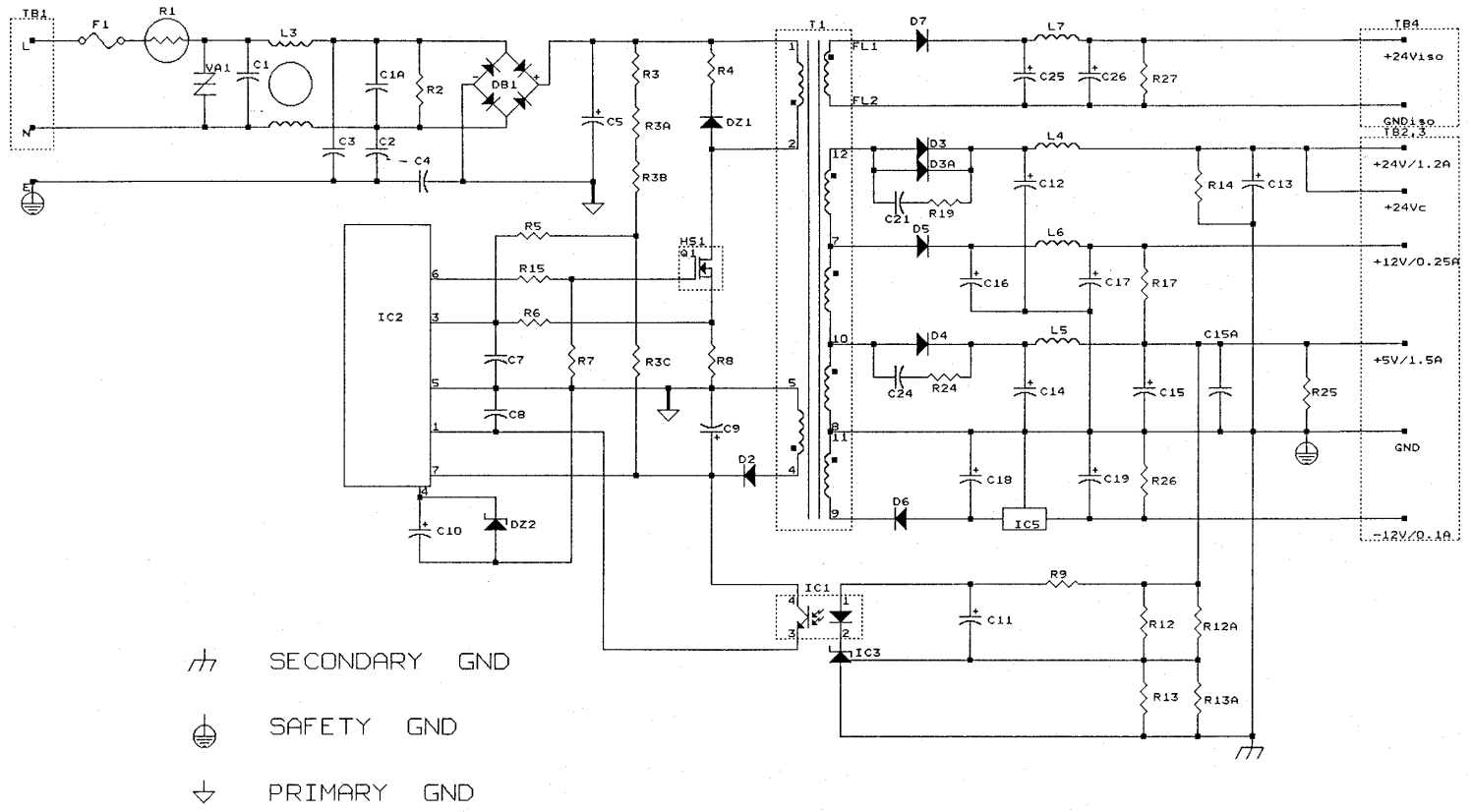
10.CIRCUIT DRAWING

POWER SUPPLY

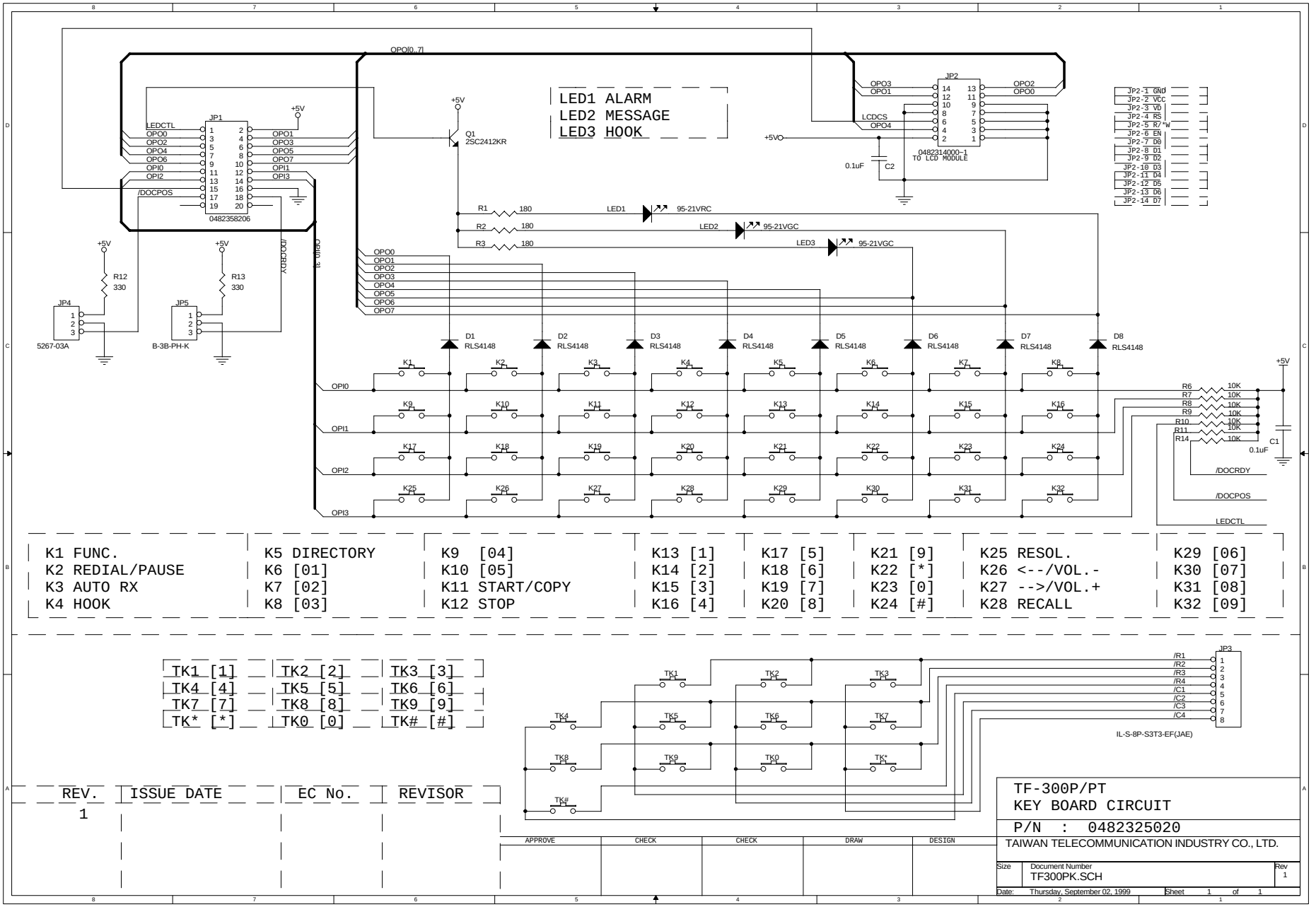


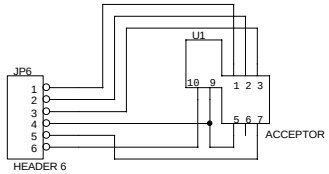

TENT 20
850-2950
94V0
850-2950 99 11
850-2950 99 11

2950-031199



Skynet FM-D0208-110797	CHECK : 黃我煌 1.26.99	REVIEW : 1.27.99	MODEL NO.	S	N	P	—	2	9	5	Ø	—	
	DRAW : 莊榮美 1.26.99	PUBLISH : 產品開發部 RR 3.11	DRAWING NAME	SCHEMATIC DIAGRAM									


OPO[0..7]
JP1
LEDCTL
OPO0
OPO2
OPO4
OPO6
OPI0
OPI2
/DOCPOS
OPO1
OPO3
OPO5
OPO7
OPI1
OPI3
0482358206
+5V
Q1
2SC2412KR
LED1 ALARM
LED2 MESSAGE
LED3 HOOK
JP2
OPO3
OPO1
LCDCS
OPO4
OPO2
OPO0
+5VO
0.1uF
C2
0482314000-1
TO LCD MODULE
JP2-1 GND
JP2-2 VCC
JP2-3 VD
JP2-4 RS
JP2-5 R/W
JP2-6 EN
JP2-7 D0
JP2-8 D1
JP2-9 D2
JP2-10 D3
JP2-11 D4
JP2-12 D5
JP2-13 D6
JP2-14 D7
R1 180
R2 180
R3 180
LED1
LED2
LED3
95-21VRC
95-21VGC
95-21VGC
R12 330
R13 330
JP4
JP5
5267-03A
B-3B-PH-K
/DOCRDY
OPI[0..3]
D1 RLS4148
D2 RLS4148
D3 RLS4148
D4 RLS4148
D5 RLS4148
D6 RLS4148
D7 RLS4148
D8 RLS4148
K1
K2
K3
K4
K5
K6
K7
K8
K9
K10
K11
K12
K13
K14
K15
K16
K17
K18
K19
K20
K21
K22
K23
K24
K25
K26
K27
K28
K29
K30
K31
K32
OPI0
OPI1
OPI2
OPI3
R6 10K
R7 10K
R8 10K
R9 10K
R10 10K
R11 10K
R14 10K
C1
0.1uF
/DOCRDY
/DOCPOS
LEDCTL
K1 FUNC.
K2 REDIAL/PAUSE
K3 AUTO RX
K4 HOOK
K5 DIRECTORY
K6 [01]
K7 [02]
K8 [03]
K9 [04]
K10 [05]
K11 START/COPY
K12 STOP
K13 [1]
K14 [2]
K15 [3]
K16 [4]
K17 [5]
K18 [6]
K19 [7]
K20 [8]
K21 [9]
K22 [*]
K23 [0]
K24 [#]
K25 RESOL.
K26 <--/VOL.-
K27 -->/VOL.+
K28 RECALL
K29 [06]
K30 [07]
K31 [08]
K32 [09]
TK1 [1]
TK2 [2]
TK3 [3]
TK4 [4]
TK5 [5]
TK6 [6]
TK7 [7]
TK8 [8]
TK9 [9]
TK* [*]
TK0 [0]
TK# [#]
TK1
TK2
TK3
TK4
TK5
TK6
TK7
TK8
TK9
TK0
TK*
TK#
JP3
/R1
/R2
/R3
/R4
/C1
/C2
/C3
/C4
IL-S-8P-S3T3-EF(JAE)
REV.
ISSUE DATE
EC No.
REVISOR
1
APPROVE
CHECK
CHECK
DRAW
DESIGN
TF-300P/PT
KEY BOARD CIRCUIT
P/N : 0482325020
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.
Size
Document Number
TF300PK.SCH
Rev
1
Date: Thursday, September 02, 1999
Sheet 1 of 1



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

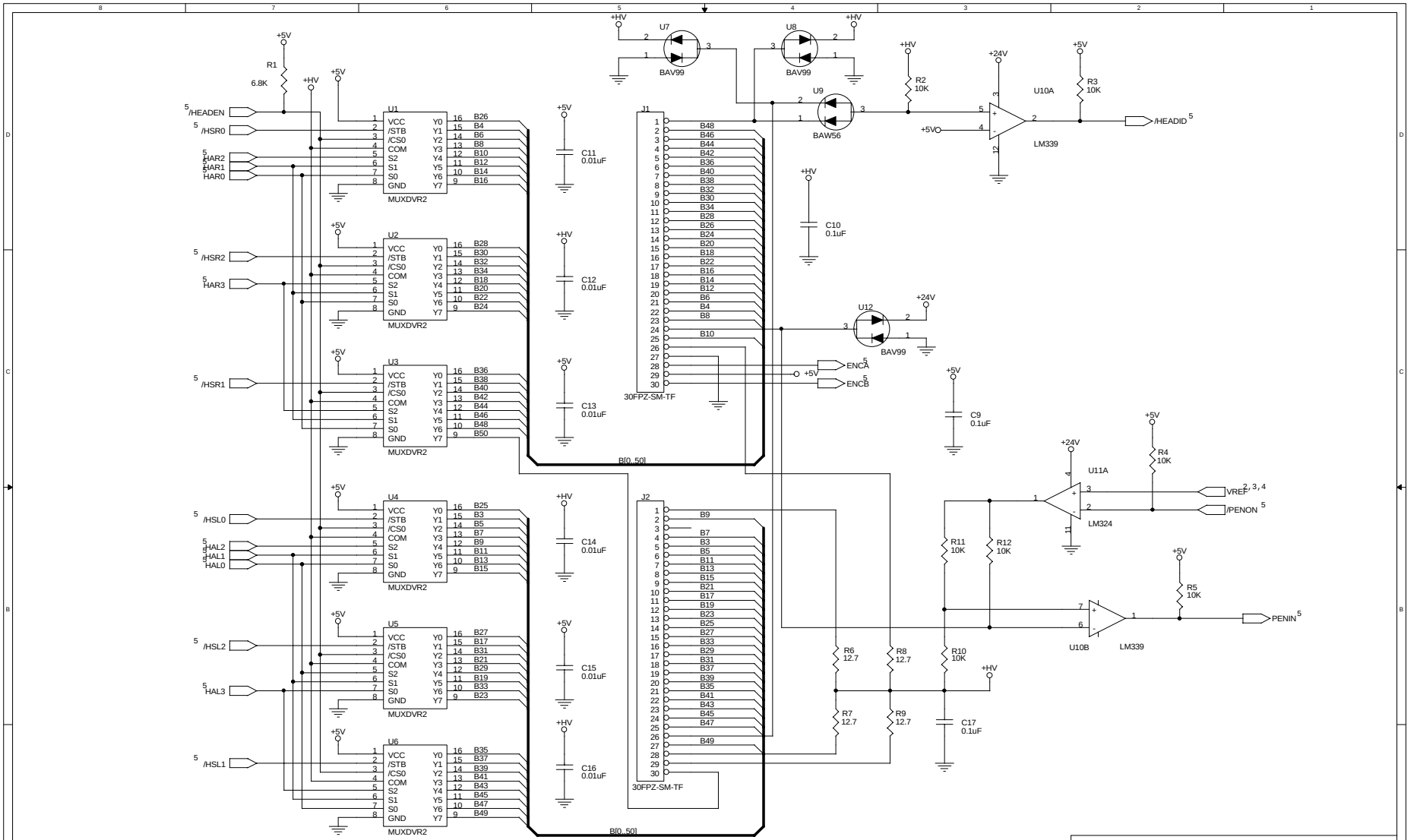
TF-300P/PT
SIM CARD BOARD CIRCUIT

P/N : 0482325050

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300PS.SCH	1

Date: Thursday, September 02, 1999 Sheet 1 of 1



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

TF-300P/PT
PRINTER BOARD CIRCUIT

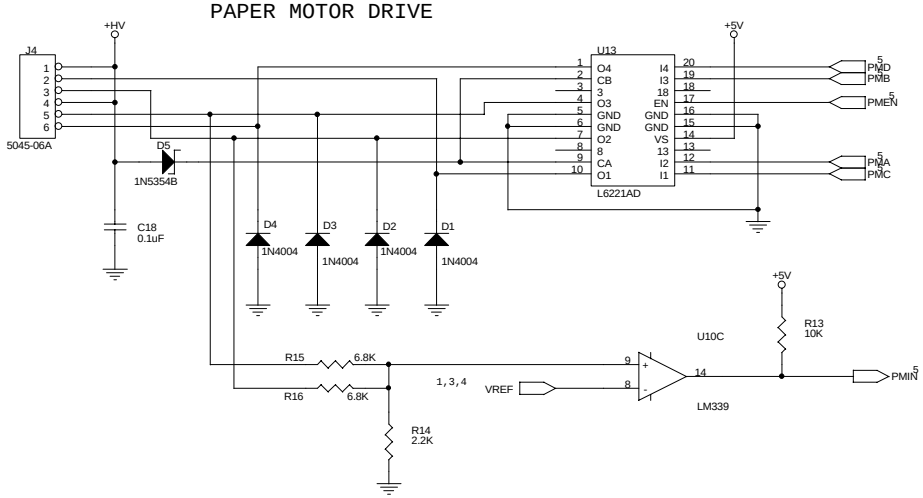
P/N : 0482325035

Taiwan Telecommunication Industry co., Ltd.

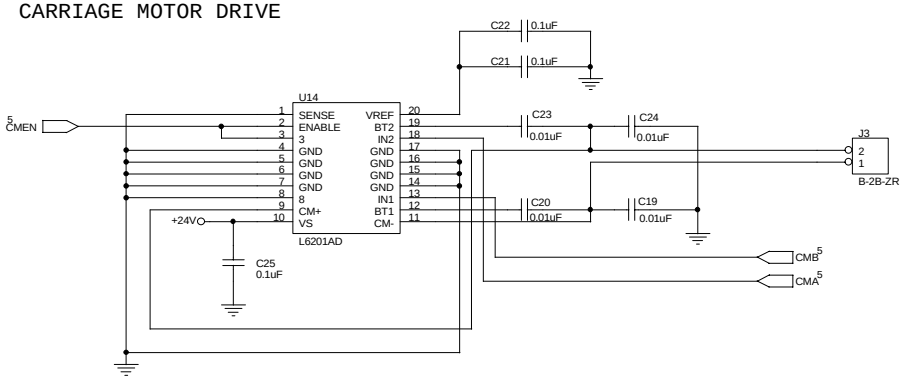
Size	Document Number	Rev
	300PPRT1.SCH	1

Date: Thursday, September 02, 1999 Sheet 1 of 5

PAPER MOTOR DRIVE



CARRIAGE MOTOR DRIVE



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

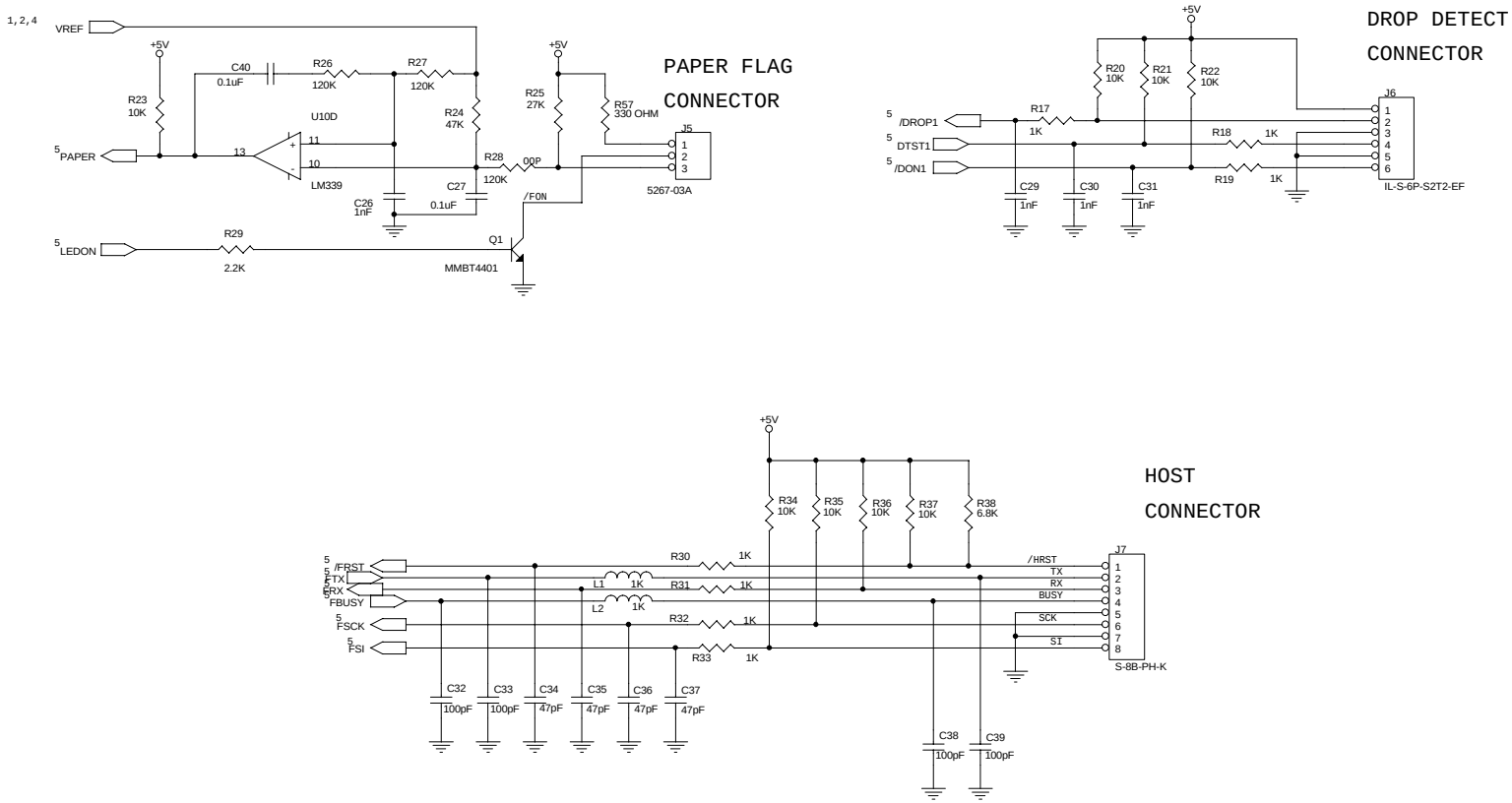
TF-300P/PT
PRINTER BOARD CIRCUIT

P/N : 0482325035

Taiwan Telecommunication Industry Co., LTD.

Size	Document Number	Rev
	300PPRT2.SCH	1

Date: Thursday, September 02, 1999 Sheet 2 of 5



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

TF-300P/PT
PRINTER BOARD CIRCUIT

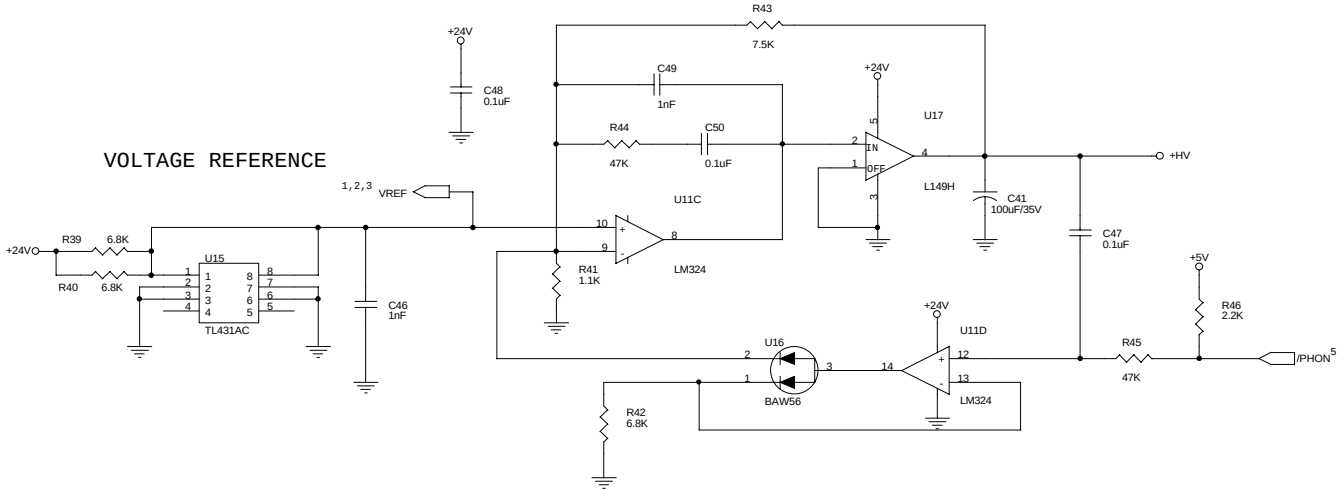
P/N : 0482325035

Taiwan Telecommunication Industry Co., Ltd.

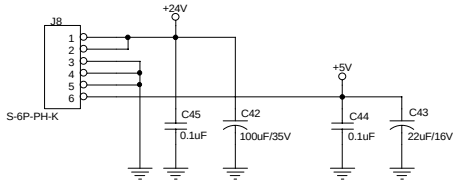
Size	Document Number	Rev
	300PPRT3.SCH	1

Date: Thursday, September 02, 1999 Sheet 3 of 5

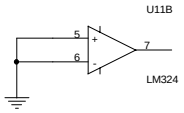
VOLTAGE REFERENCE



POWER CONNECTOR



PRINT HEAD SUPPLY



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

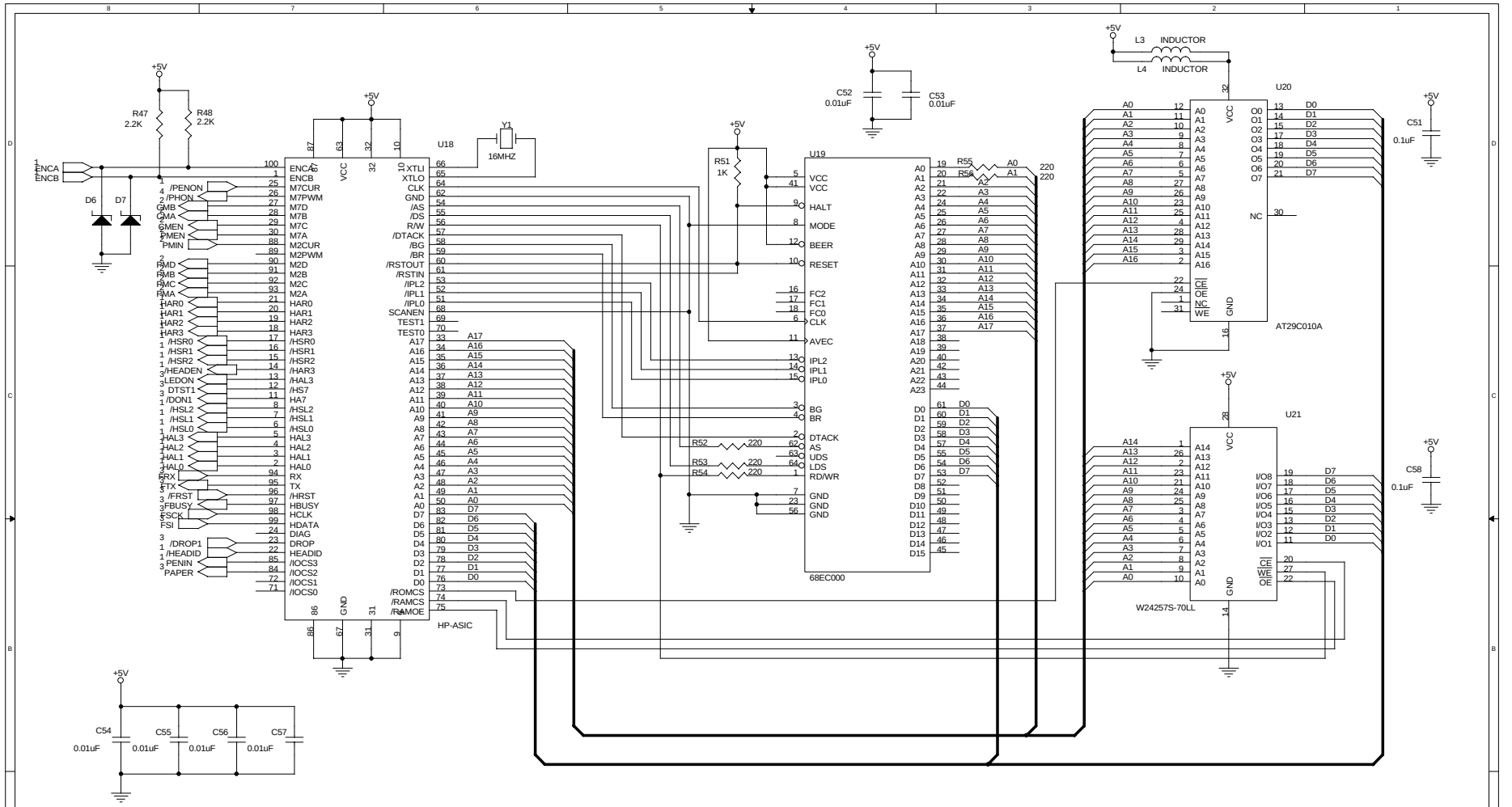
TF-300P/PT
PRINTER BOARD CIRCUIT

P/N : 0482325035

Taiwan Telecommunication Industry Co., Ltd.

Size	Document Number	Rev
	300PPRT4.SCH	1

Date: Thursday, September 02, 1999 Sheet 4 of 5



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

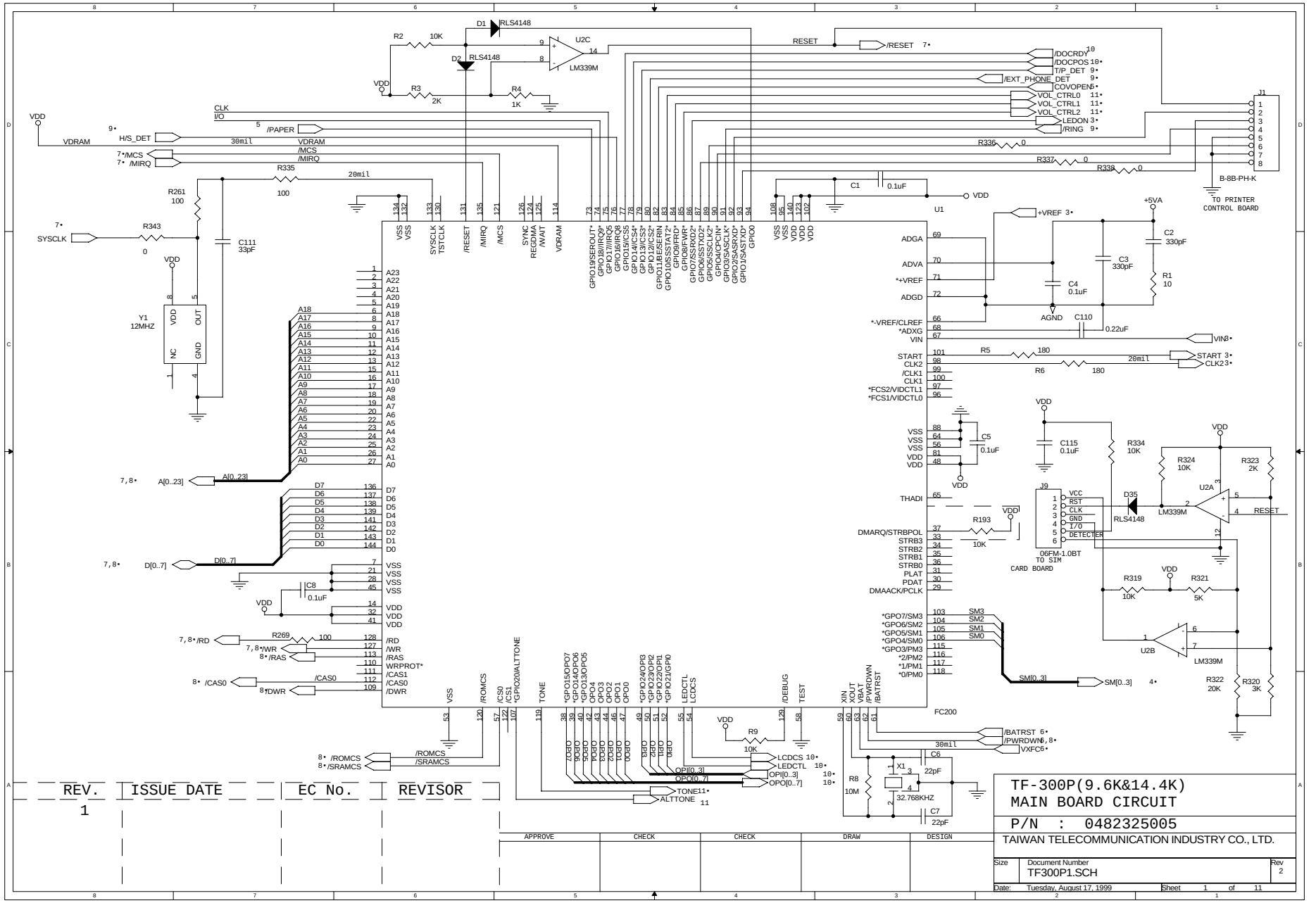
TF-300P/PT
PRINTER BOARD CIRCUIT

P/N : 0482325035

Taiwan Telecommunication Industry Cd., Ldt.

Size	Document Number	Rev
	300PPRT5.SCH	1

Date: Thursday, September 02, 1999 Sheet 5 of 5



REV.	ISSUE DATE	EC No.	REVISOR
1			

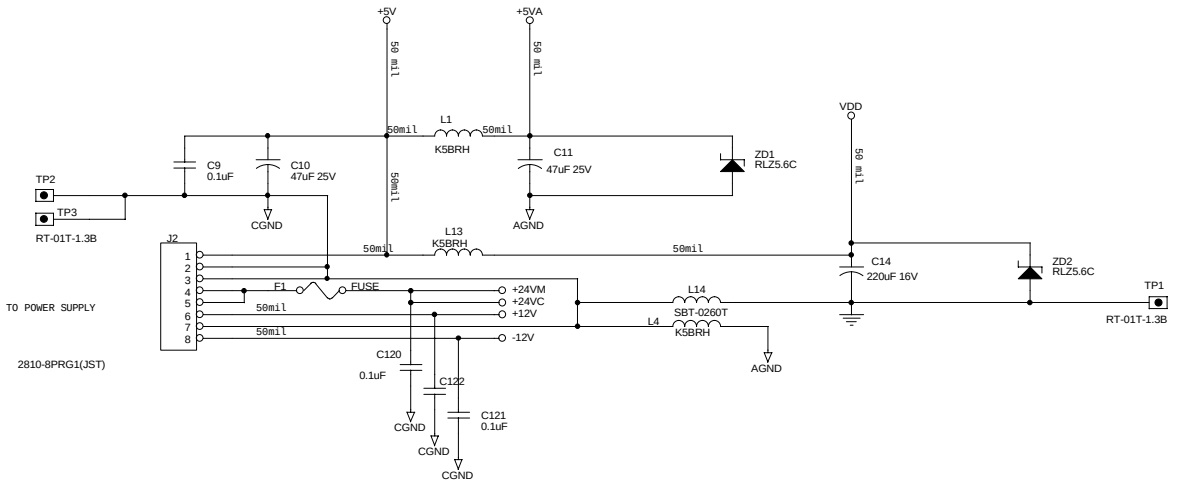
APPROVE	CHECK	CHECK	DRAW	DESIGN

TF-300P(9.6K&14.4K) MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P1.SCH	2
Date: Tuesday, August 17, 1999	Sheet 1 of 11	



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

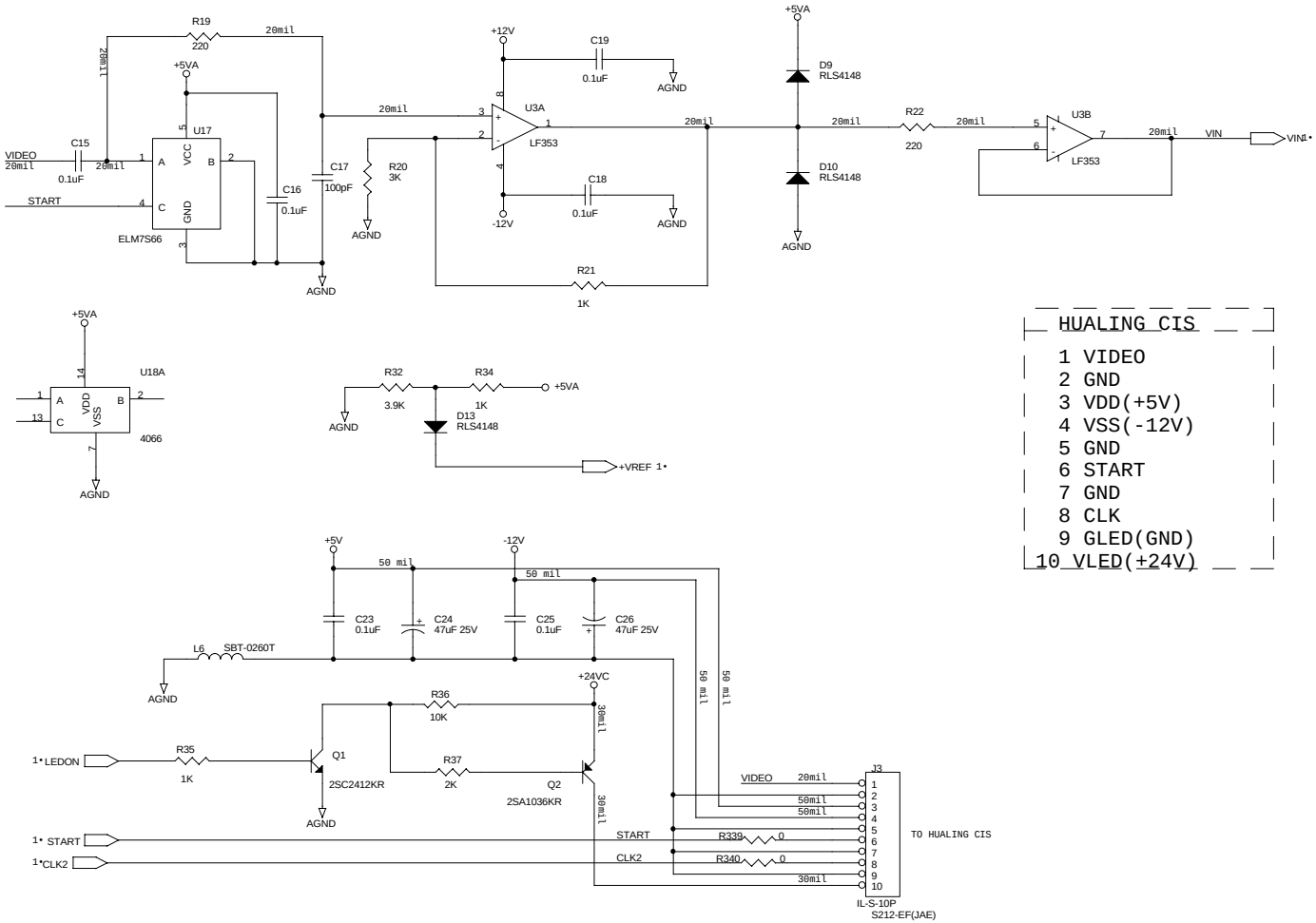
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P2.SCH	2

Date: Thursday, September 02, 1999 Sheet 2 of 11



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

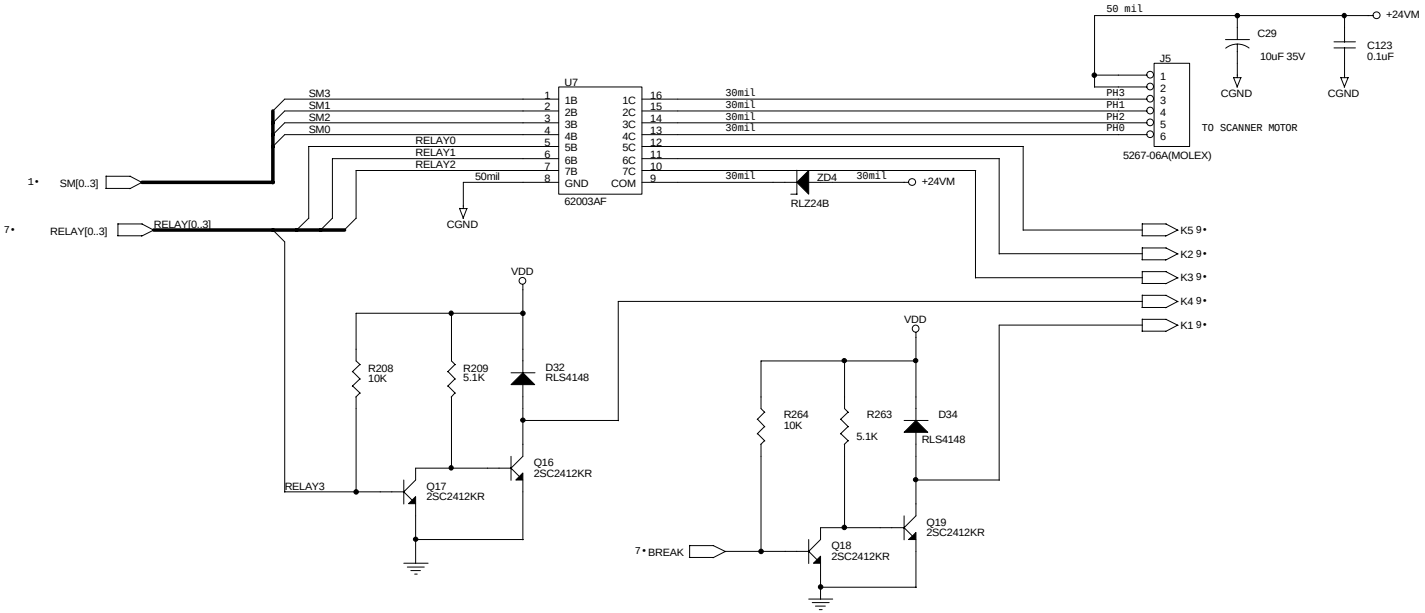
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P3.SCH	2

Date: Thursday, September 02, 1999 Sheet 3 of 11



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

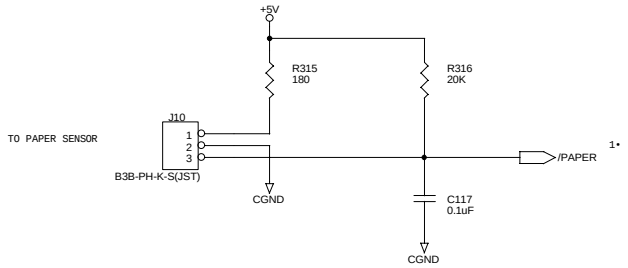
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

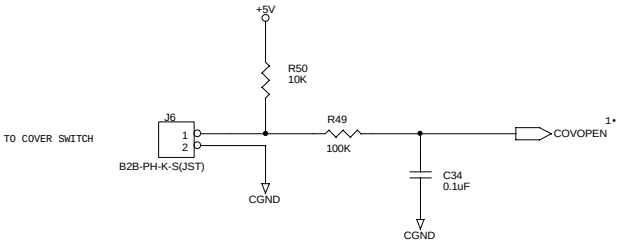
P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P4.SCH	2

Date: Thursday, September 02, 1999 Sheet 4 of 11





SWITSHES & SENSORS DEFINITATION

NAME	ACTIVE	DETECTION
COVOPEN	HIGH	COVER OPEN
PAPER	LOW	PAPER READY

REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

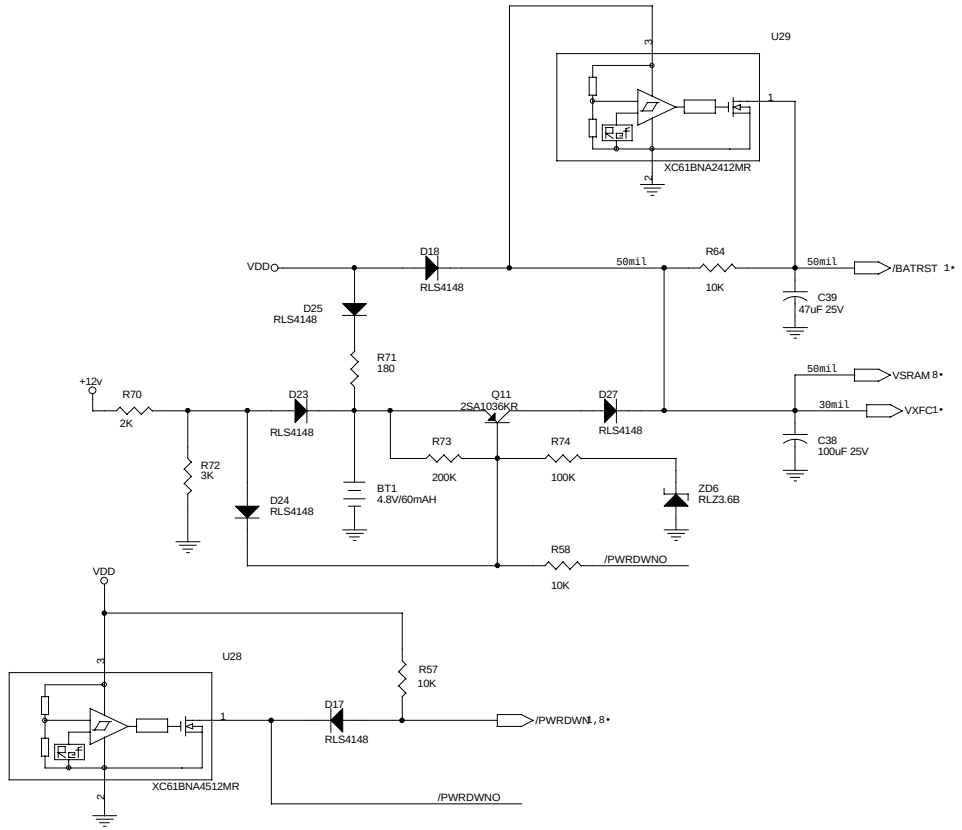
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P5.SCH	2

Date: Thursday, September 02, 1999 Sheet 5 of 11



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

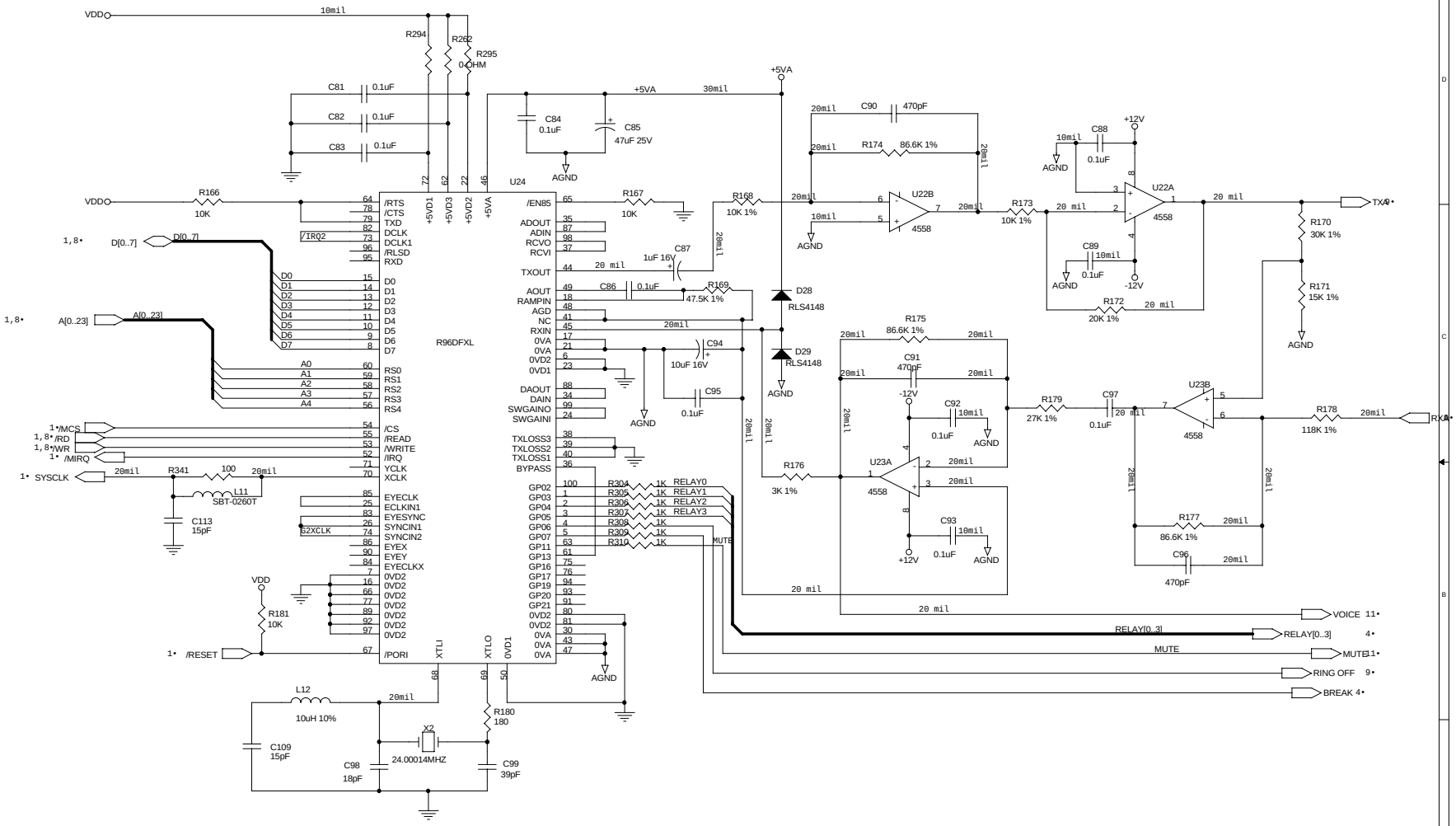
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P6.SCH	2

Date: Thursday, September 02, 1999 Sheet 6 of 11



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

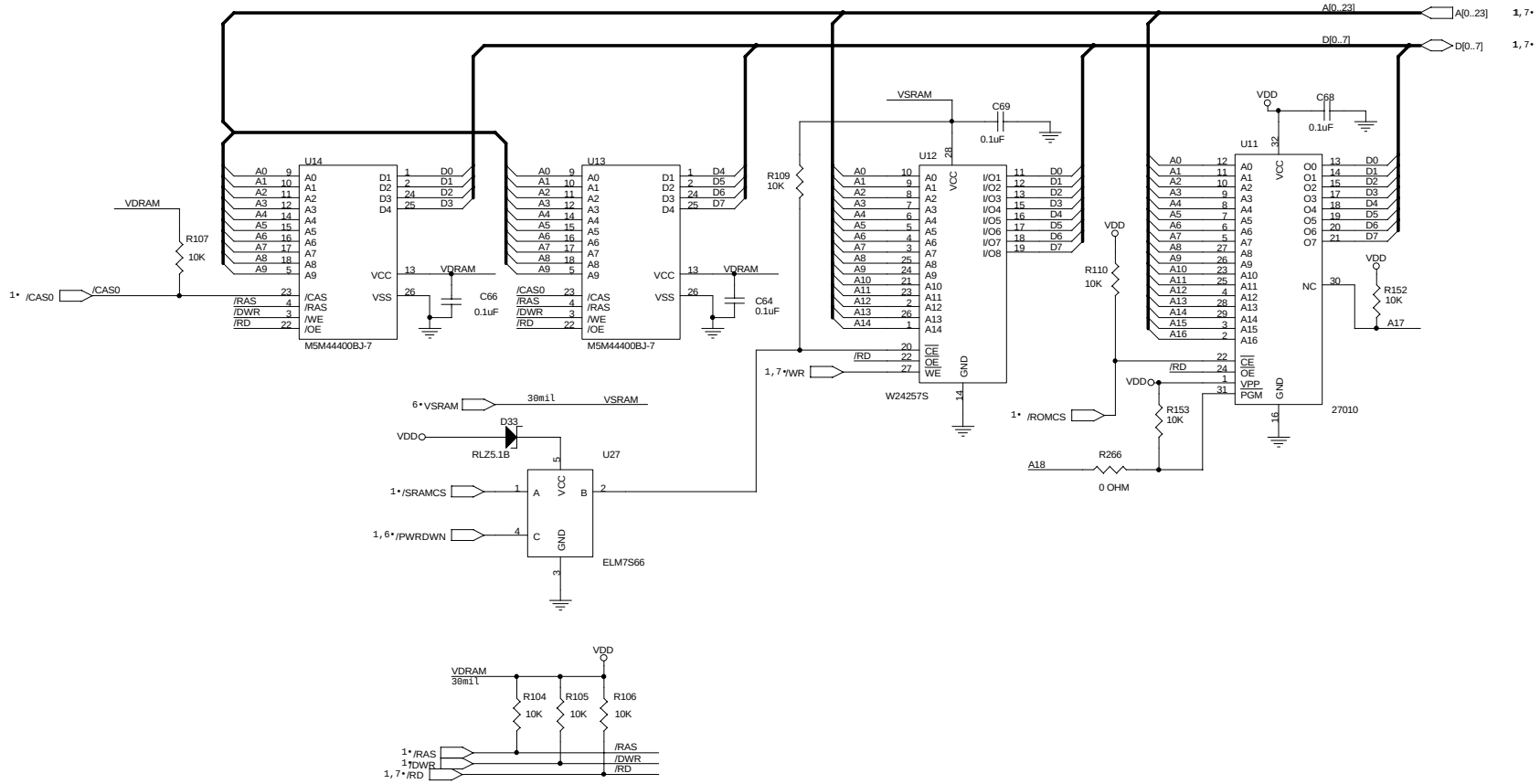
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P7.SCH	2

Date: Thursday, September 02, 1999 Sheet 7 of 11



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

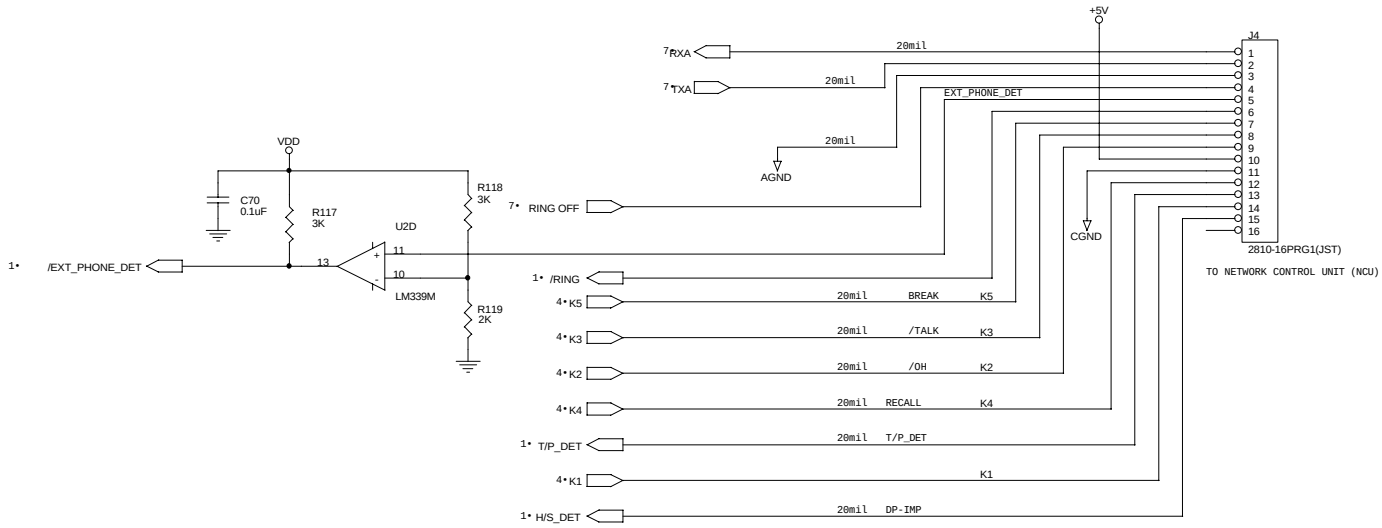
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P8.SCH	2

Date: Thursday, September 02, 1999 Sheet 8 of 11



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

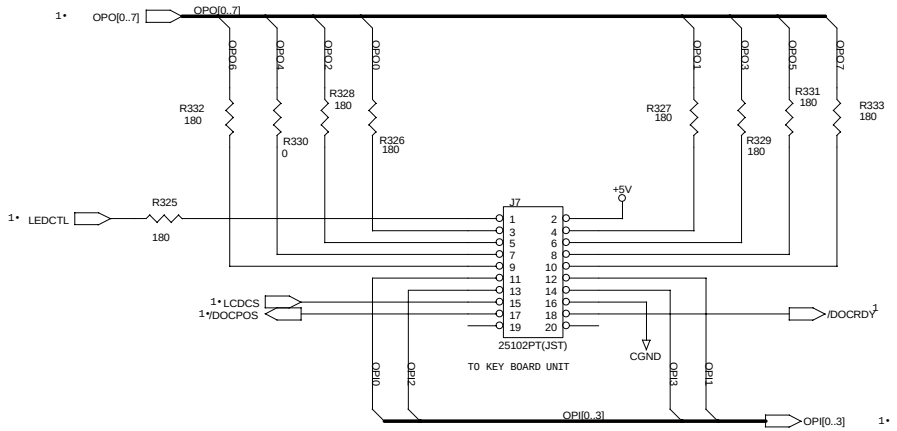
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P9.SCH	2

Date: Thursday, September 02, 1999 Sheet 9 of 11



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

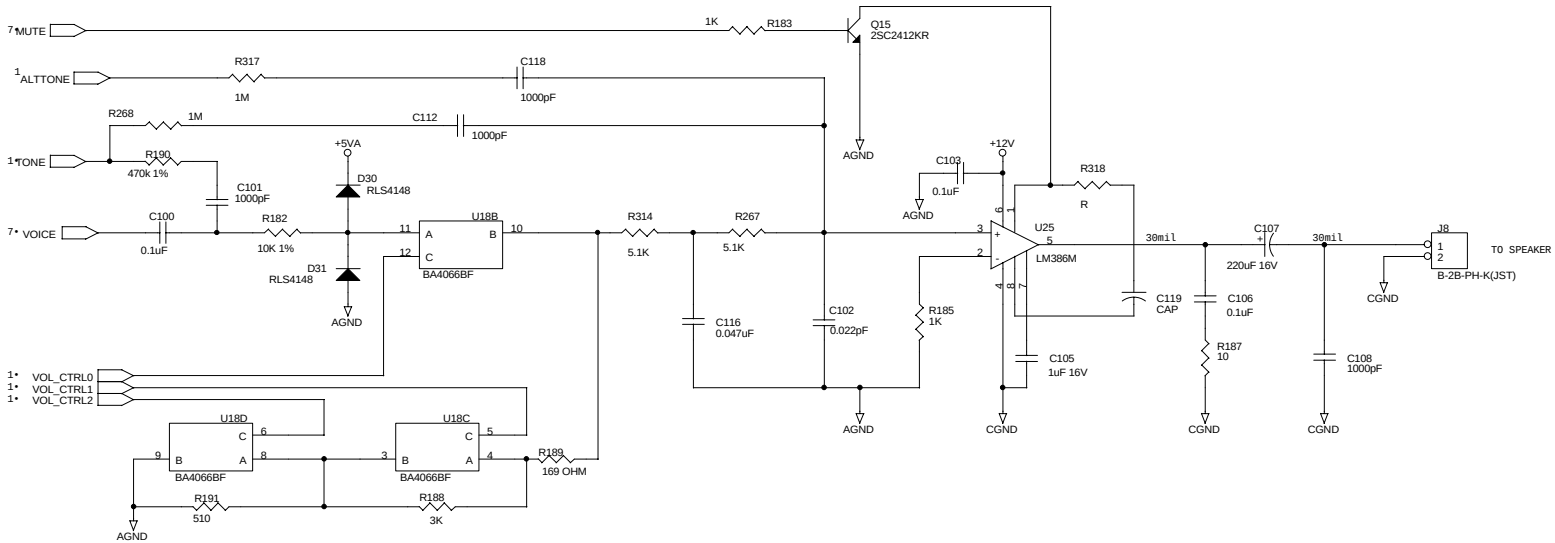
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELCOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P10.SCH	2

Date: Thursday, September 02, 1999 Sheet 10 of 11



REV.	ISSUE DATE	EC No.	REVISOR
1			

APPROVE	CHECK	CHECK	DRAW	DESIGN

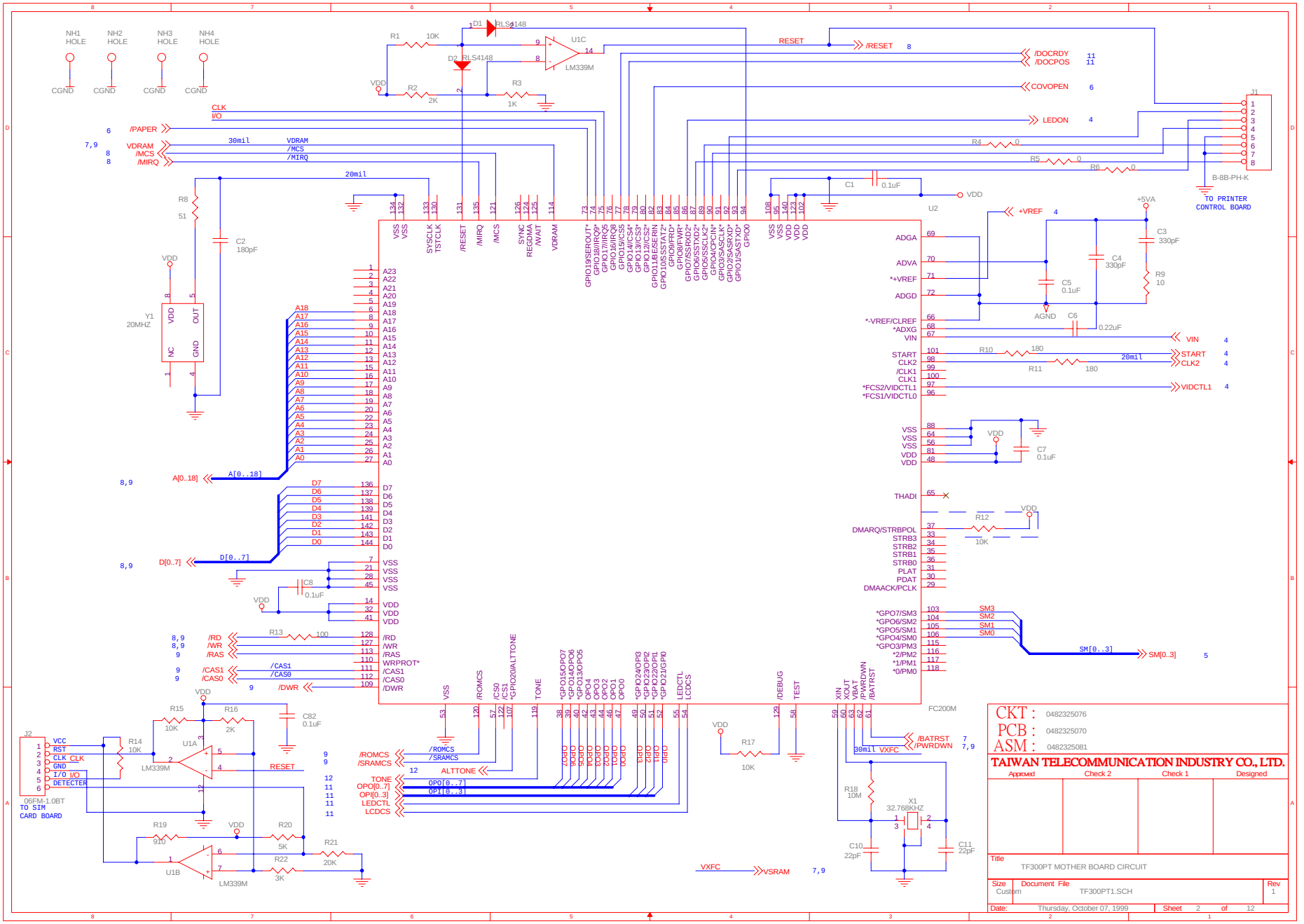
TF-300P(9.6K&14.4K)
MAIN BOARD CIRCUIT

P/N : 0482325005

TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Size	Document Number	Rev
	TF300P11.SCH	2

Date: Thursday, September 02, 1999 Sheet 11 of 11



CKT :	0482325076
PCB :	0482325070
ASM :	0482325081

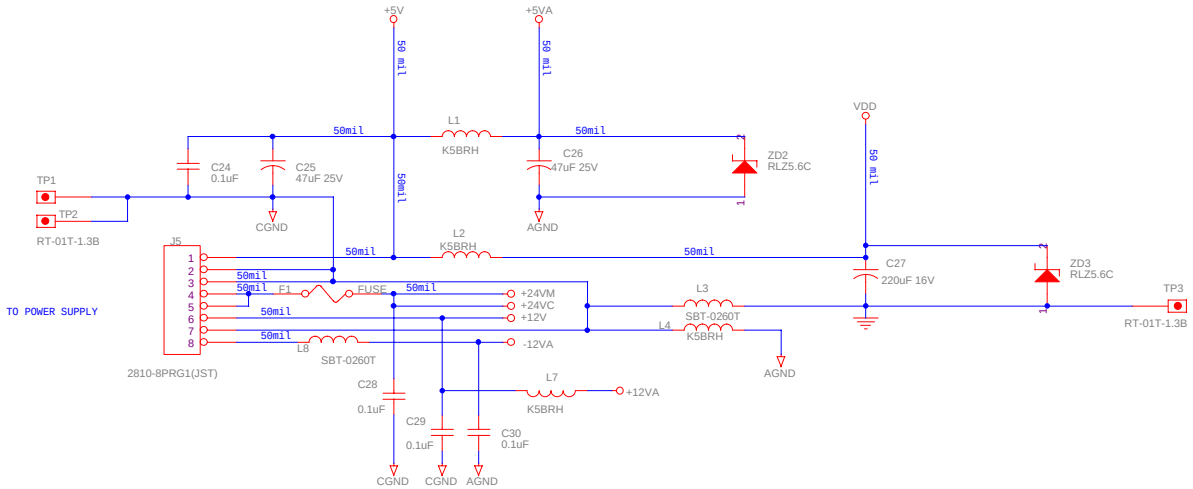
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Approved	Check 2	Check 1	Designed

Title: TF300PT MOTHER BOARD CIRCUIT

Size	Document File	Rev
Custom	TF300PT1.SCH	1

Date: Thursday, October 07, 1999 Sheet 2 of 12



CKT :	0482325076
PCB :	0482325070
ASM :	0482325081

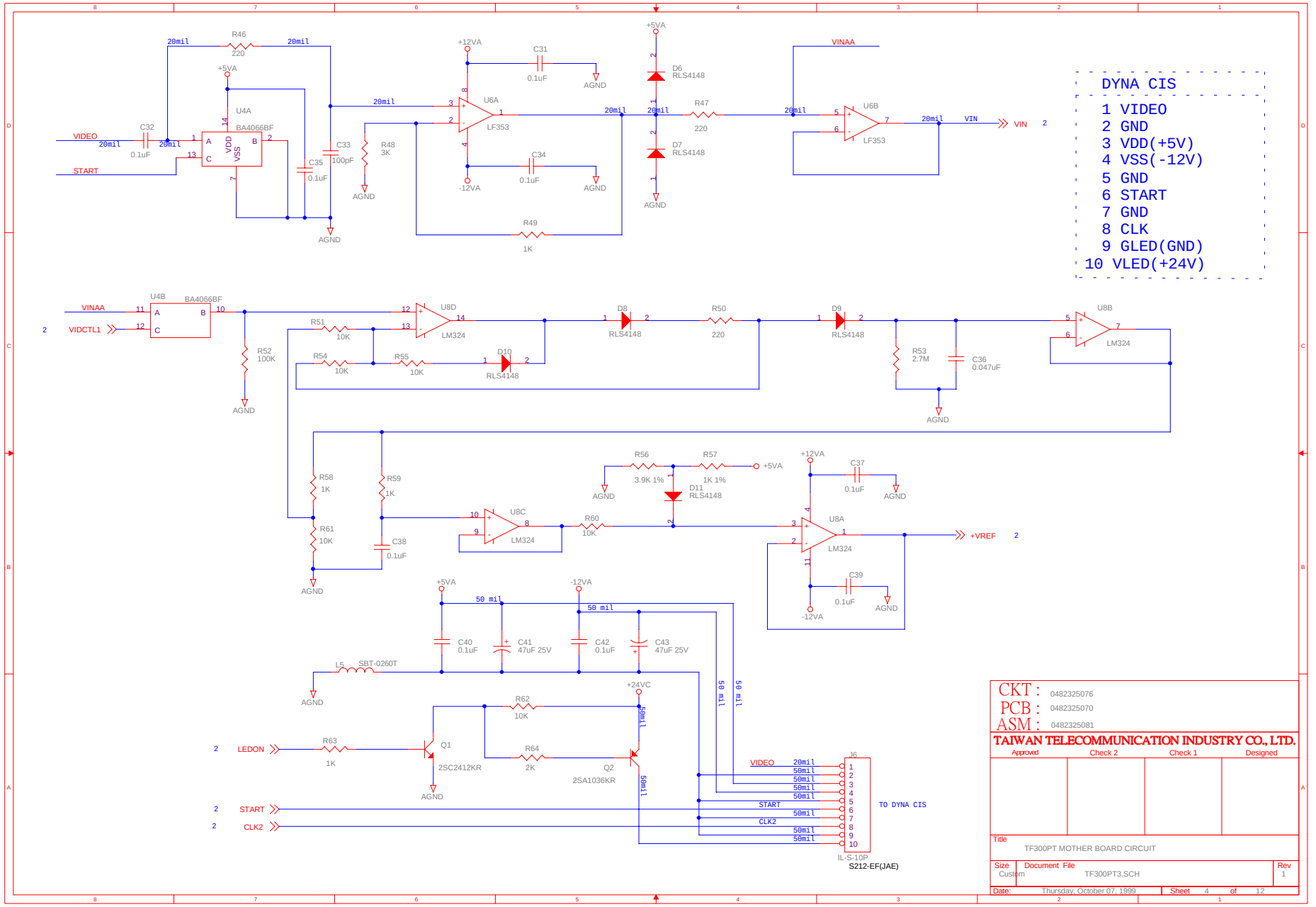
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

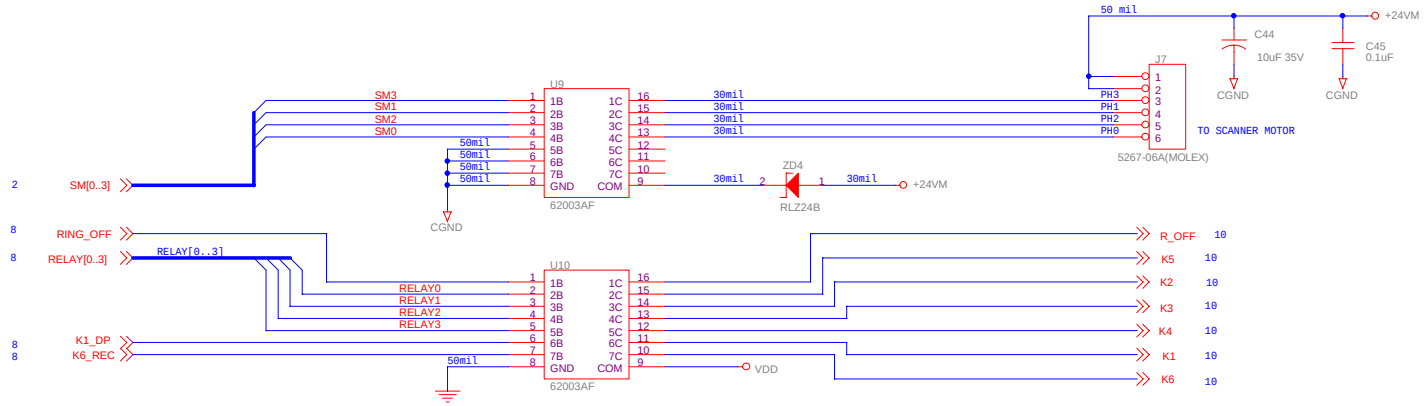
Approved	Check 2	Check 1	Designed

Title: TF300PT MOTHER BOARD CIRCUIT

Size	Document File	Rev
B	TF300PT2.SCH	1

Date: Thursday, October 07, 1999 Sheet 3 of 12


DYNA CIS
1 VIDEO
2 GND
3 VDD(+5V)
4 VSS(-12V)
5 GND
6 START
7 GND
8 CLK
9 GLED(GND)
10 VLED(+24V)
R46 220
C32 0.1uF
C33 100pF
C35 0.1uF
R48 3K
R49 1K
C31 0.1uF
C34 0.1uF
R47 220
D6 RLS4148
D7 RLS4148
U4A BA4066BF
U6A LF353
U6B LF353
VIDEO
START
VINAA
VIN
AGND
+5VA
+12VA
-12VA
U4B BA4066BF
VIDCTL1
R51 10K
R52 100K
R54 10K
R55 10K
R50 220
R53 2.7M
C36 0.047uF
D8 RLS4148
D9 RLS4148
D10 RLS4148
U8D LM324
U8B LM324
R56 3.9K 1%
R57 1K 1%
D11 RLS4148
C37 0.1uF
R58 1K
R59 1K
R61 10K
C38 0.1uF
R60 10K
U8C LM324
U8A LM324
C39 0.1uF
+VREF
C40 0.1uF
C41 47uF 25V
C42 0.1uF
C43 47uF 25V
L5 SBT-0260T
+24VC
R62 10K
R63 1K
R64 2K
Q1 2SC2412KR
Q2 2SA1036KR
LEDON
CLK2
J6
IL-S-10P
S212-EF(JAE)
TO DYNA CIS
CKT : 0482325076
PCB : 0482325070
ASM : 0482325081
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.
Approved
Check 2
Check 1
Designed
Title
TF300PT MOTHER BOARD CIRCUIT
Size
Custom
Document File
TF300PT3.SCH
Rev
1
Date:
Thursday, October 07, 1999
Sheet 4 of 12



CKT :	0482325076
PCB :	0482325070
ASM :	0482325081

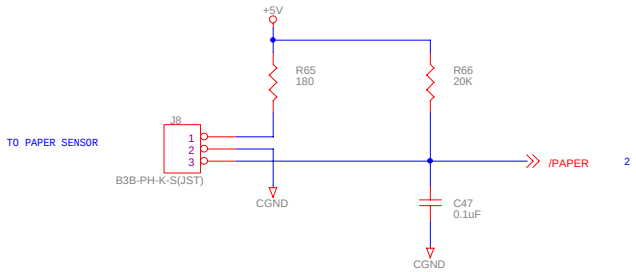
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

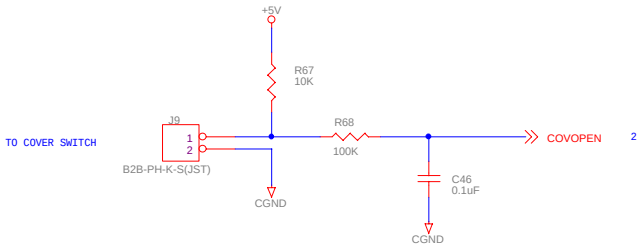
Approved	Check 2	Check 1	Designed

Title: TF300PT MOTHER BOARD CIRCUIT

Size	Document File	Rev
B	TF300PT4.SCH	1

Date: Thursday, October 07, 1999 Sheet 5 of 12





SWITSHES & SENSORS DEFINITATION

NAME	ACTIVE	DETECTION
COVOPEN	HIGH	COVER OPEN
PAPER	LOW	PAPER READY

CKT : 0482325076
PCB : 0482325070
ASM : 0482325081

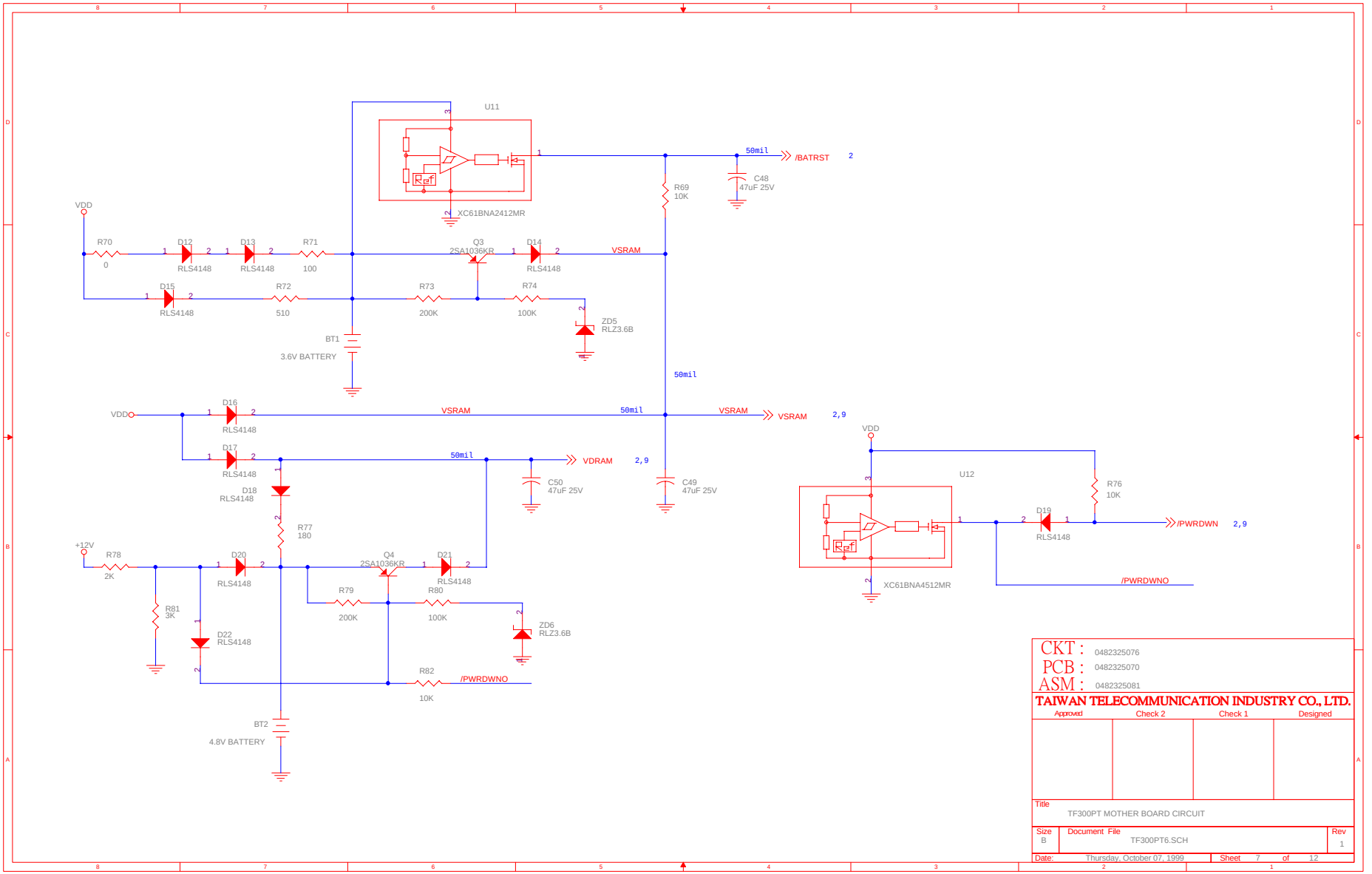
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Approved	Check 2	Check 1	Designed

Title: TF300PT MOTHER BOARD CIRCUIT

Size	Document File	Rev
B	TF300PT5.SCH	1

Date: Thursday, October 07, 1999 Sheet 6 of 12



CKT : 0482325076
PCB : 0482325070
ASM : 0482325081

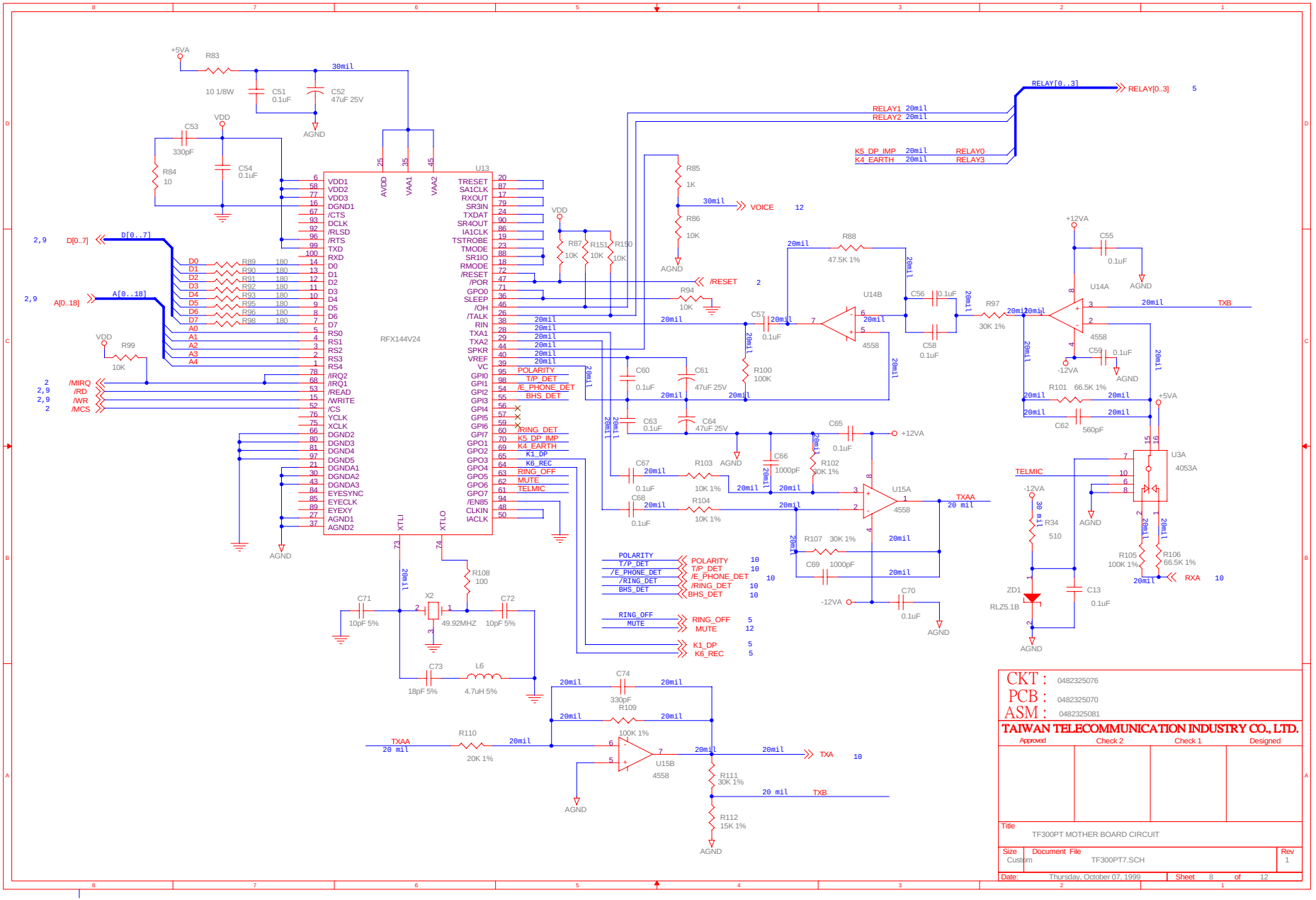
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

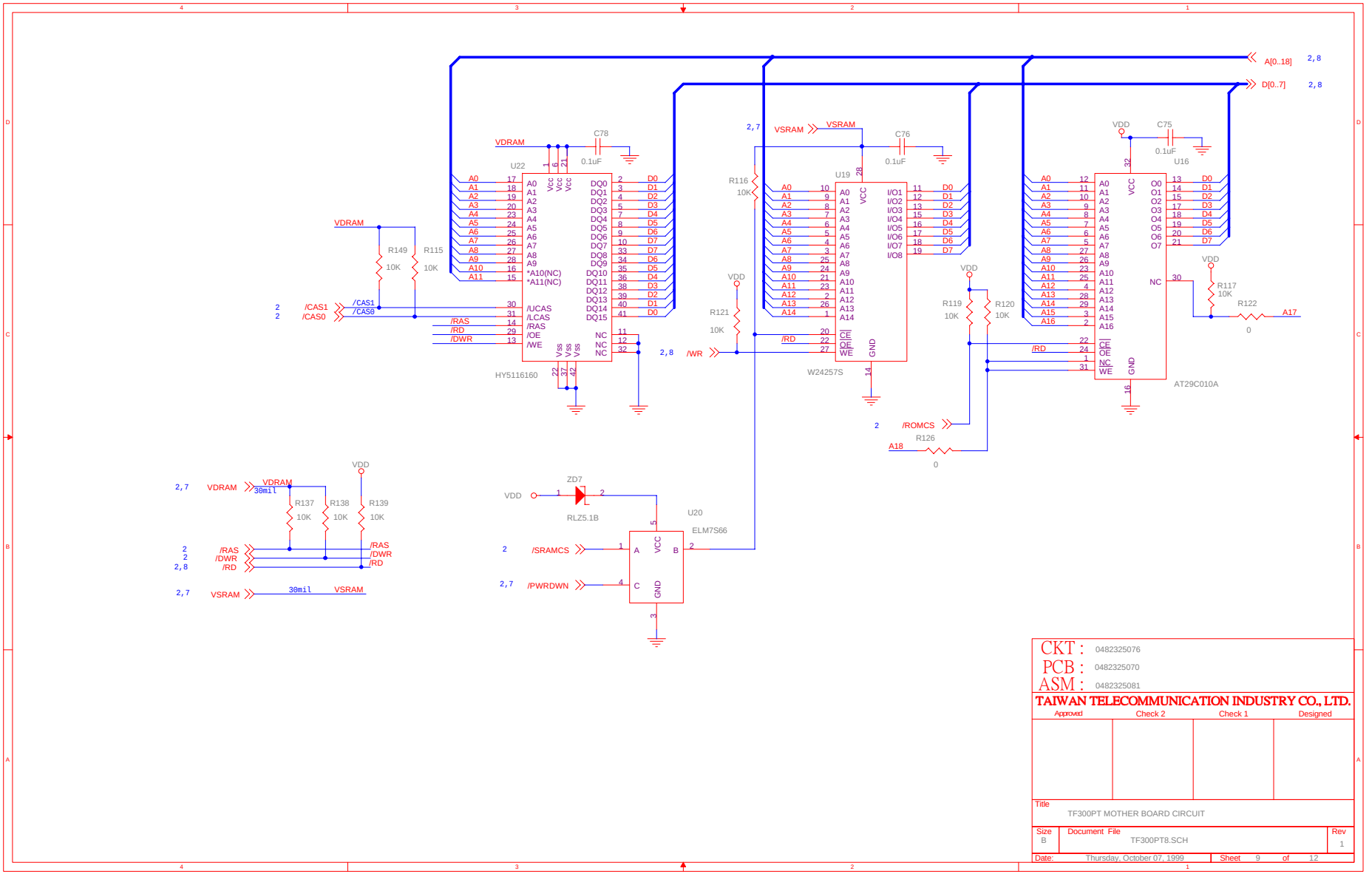
Approved	Check 2	Check 1	Designed

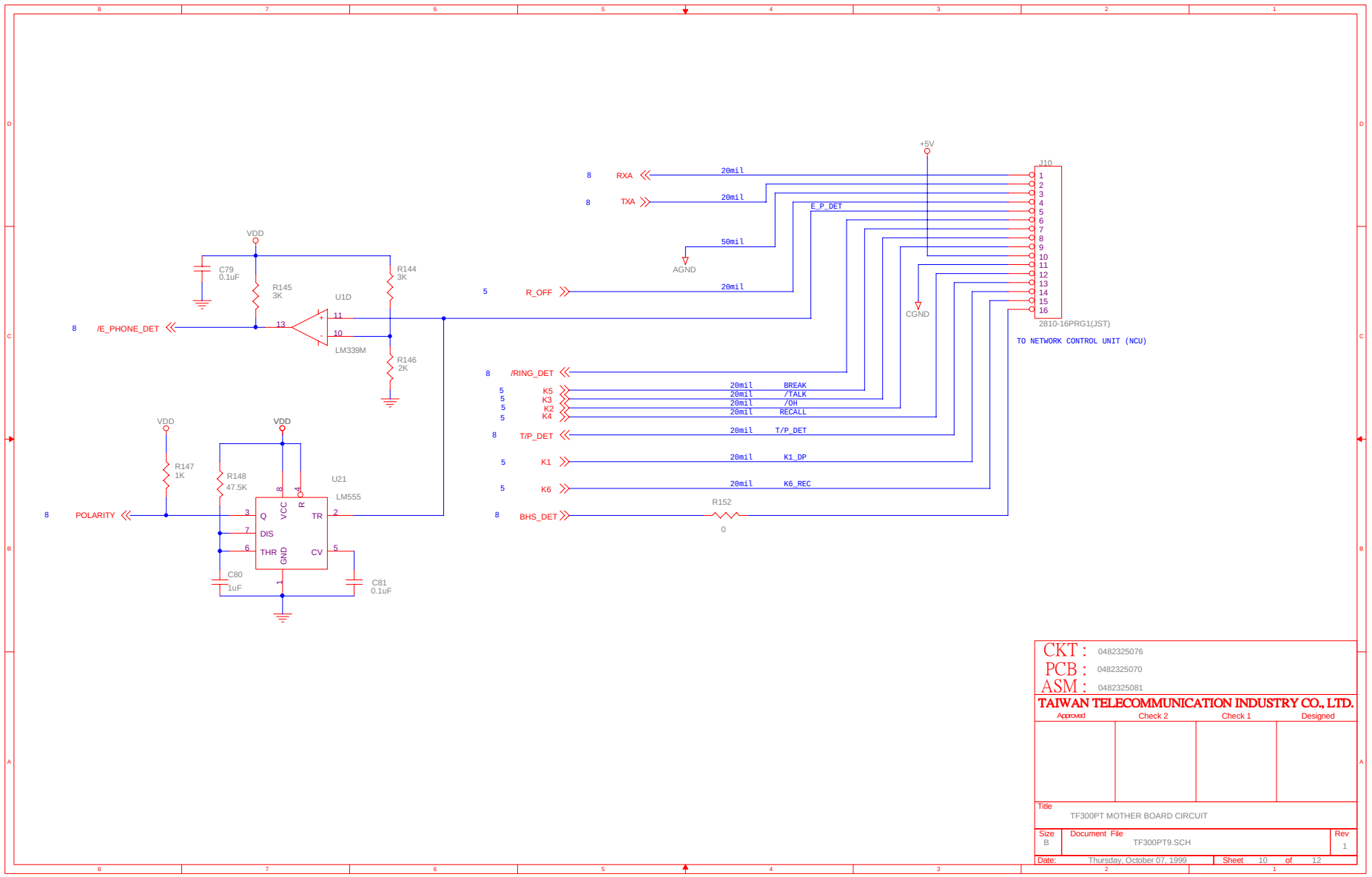
Title: TF300PT MOTHER BOARD CIRCUIT

Size	Document File	Rev
B	TF300PT6.SCH	1

Date: Thursday, October 07, 1999 Sheet 7 of 12


+5VA
R83
10 1/8W
C51
0.1uF
C52
47uF 25V
AGND
30mil
VDD
C53
330pF
C54
0.1uF
R84
10
RFX144V24
U13
AVDD
VAA1
VAA2
VDD1
VDD2
VDD3
DGND1
/CTS
DCLK
/RLSD
/RTS
TXD
RXD
D0
D1
D2
D3
D4
D5
D6
D7
RS0
RS1
RS2
RS3
RS4
/IRQ2
/IRQ1
/READ
/WRITE
/CS
YCLK
XCLK
DGND2
DGND3
DGND4
DGND5
DGNDA1
DGNDA2
DGNDA3
EYESYNC
EYECLK
EYEXY
AGND1
AGND2
XTLI
XTLO
TRESET
SA1CLK
RXOUT
SR3IN
TXDAT
SR4OUT
IA1CLK
TSTROBE
TMODE
SR1IO
RMODE
/RESET
/POR
GPO0
SLEEP
/OH
/TALK
RIN
TXA1
TXA2
SPKR
VREF
VC
GPI0
GPI1
GPI2
GPI3
GPI4
GPI5
GPI6
GPI7
GPO1
GPO2
GPO3
GPO4
GPO5
GPO6
GPO7
/EN85
CLKIN
IACLK
D[0..7]
A[0..18]
/MIRQ
/RD
/WR
/MCS
R89 180
R90 180
R91 180
R92 180
R93 180
R95 180
R96 180
R98 180
R99
10K
POLARITY
T/P_DET
/E_PHONE_DET
BHS_DET
/RING_DET
K5_DP_IMP
K4_EARTH
K1_DP
K6_REC
RING_OFF
MUTE
TELMIC
R85
1K
R86
10K
VOICE
R87
10K
R151
10K
R150
10K
/RESET
R94
10K
RELAY[0..3]
RELAY1
RELAY2
K5_DP_IMP
K4_EARTH
RELAY0
RELAY3
R88
47.5K 1%
C57
0.1uF
C56
0.1uF
C58
0.1uF
U14B
4558
R97
30K 1%
C55
0.1uF
U14A
4558
C59
0.1uF
TXB
R101
66.5K 1%
C62
560pF
+5VA
-12VA
C60
0.1uF
C61
47uF 25V
C63
0.1uF
C64
47uF 25V
R100
100K
C65
0.1uF
+12VA
C66
1000pF
R102
30K 1%
C67
0.1uF
R103
10K 1%
C68
0.1uF
R104
10K 1%
U15A
4558
TXAA
R107
30K 1%
C69
1000pF
C70
0.1uF
U3A
4053A
R34
510
ZD1
RLZ5.1B
C13
0.1uF
R105
100K 1%
R106
66.5K 1%
RXA
C71
10pF 5%
X2
49.92MHZ
C72
10pF 5%
R108
100
C73
18pF 5%
L6
4.7uH 5%
C74
330pF
R109
100K 1%
R110
20K 1%
U15B
4558
R111
30K 1%
R112
15K 1%
TXA
CKT : 0482325076
PCB : 0482325070
ASM : 0482325081
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.
Approved
Check 2
Check 1
Designed
Title
TF300PT MOTHER BOARD CIRCUIT
Size
Custom
Document File
TF300PT7.SCH
Rev
1
Date:
Thursday, October 07, 1999
Sheet 8 of 12


A[0..18] 2,8
D[0..7] 2,8
VDRAM
VSRAM
VDD
C78
C76
C75
0.1uF
U22
U19
U16
HY5116160
W24257S
AT29C010A
R115
R116
R117
R119
R120
R121
R122
R126
R137
R138
R139
R149
10K
0
/CAS1
/CAS0
/RAS
/RD
/DWR
/WR
/ROMCS
/SRAMCS
/PWRDWN
A18
A17
30mil
ZD7
RLZ5.1B
U20
ELM7S66
CKT : 0482325076
PCB : 0482325070
ASM : 0482325081
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.
Approved
Check 2
Check 1
Designed
Title
TF300PT MOTHER BOARD CIRCUIT
Size B
Document File
TF300PT8.SCH
Rev 1
Date: Thursday, October 07, 1999
Sheet 9 of 12



CKT :	0482325076
PCB :	0482325070
ASM :	0482325081

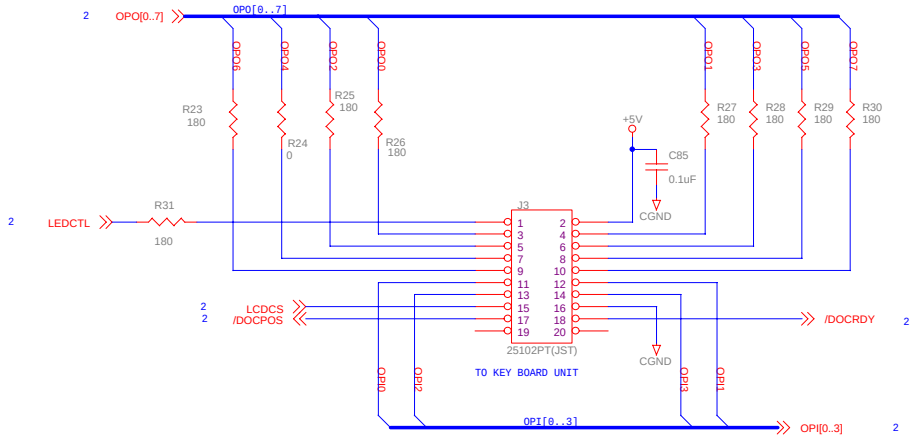
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Approved	Check 2	Check 1	Designed

Title: TF300PT MOTHER BOARD CIRCUIT

Size	Document File	Rev
B	TF300PT9.SCH	1

Date: Thursday, October 07, 1999 Sheet 10 of 12



CKT :	0482325076
PCB :	0482325070
ASM :	0482325081

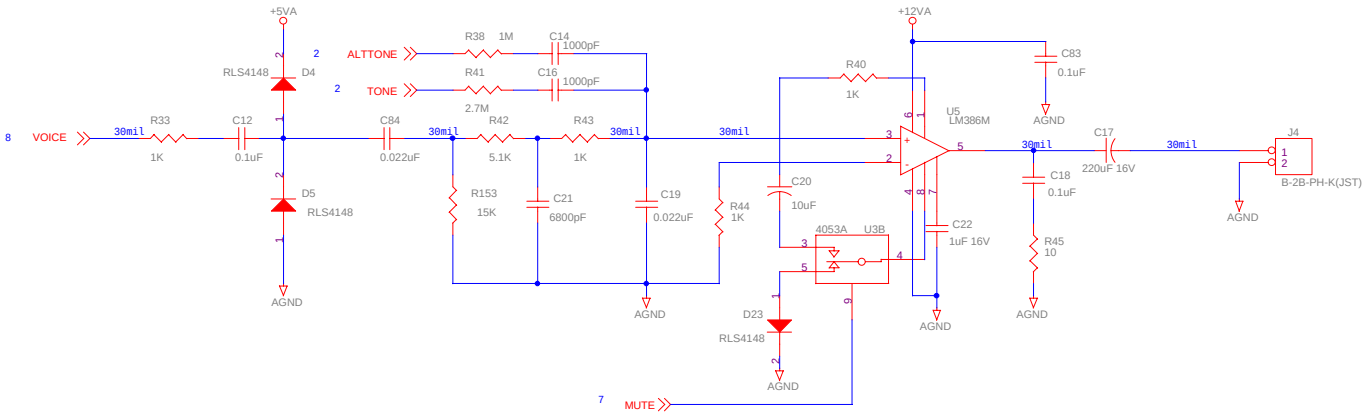
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

Approved	Check 2	Check 1	Designed

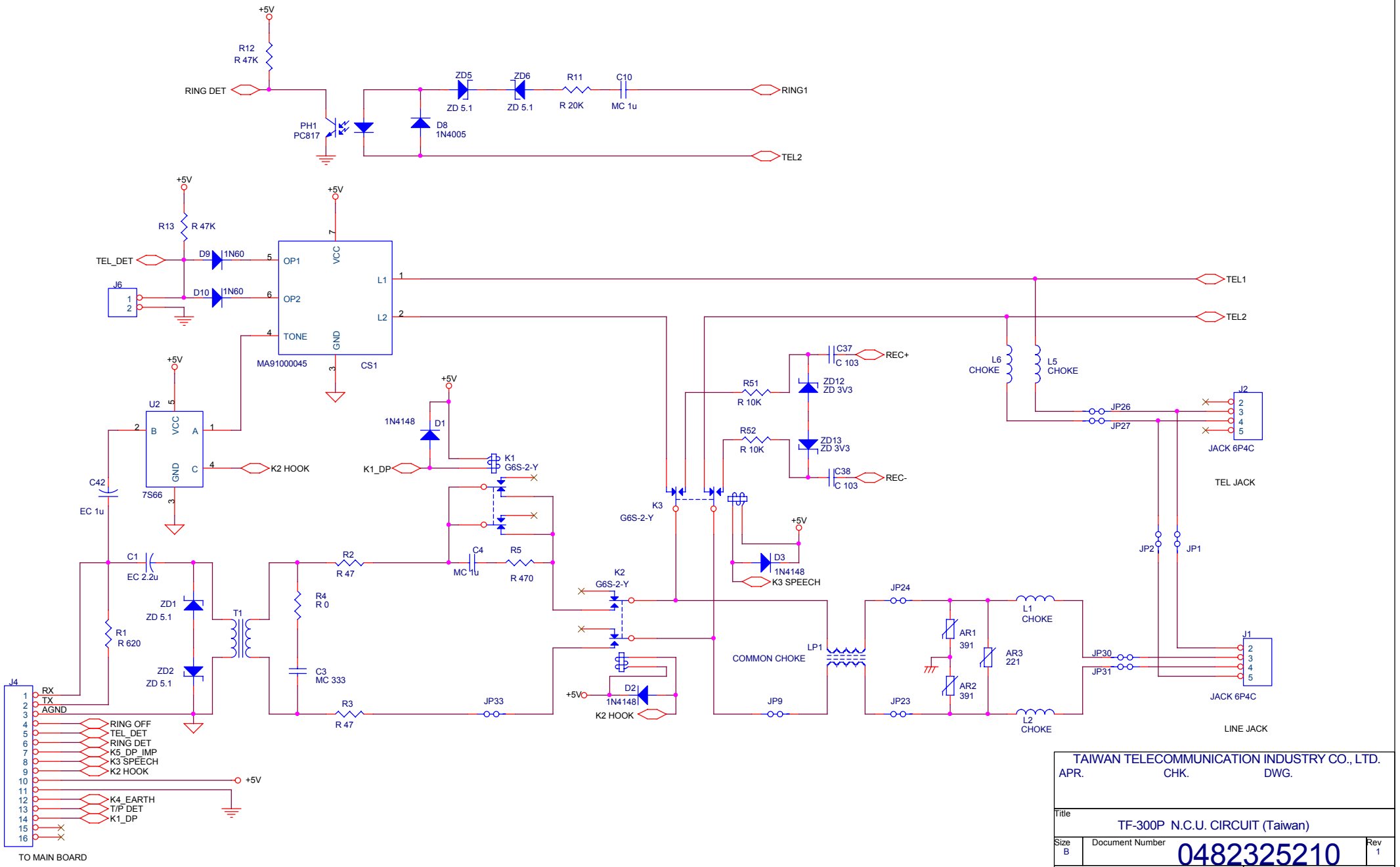
Title: TF300PT MOTHER BOARD CIRCUIT

Size	Document File	Rev
B	TF300PT10.SCH	1

Date: Thursday, October 07, 1999 Sheet 11 of 12



CKT : 0482325076			
PCB : 0482325070			
ASM : 0482325081			
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.			
Approved	Check 2	Check 1	Designed
Title: TF300PT MOTHER BOARD CIRCUIT			
Size: B	Document File: TF300PT11.SCH		Rev: 1
Date: Thursday, October 07, 1999	Sheet 12 of 12		



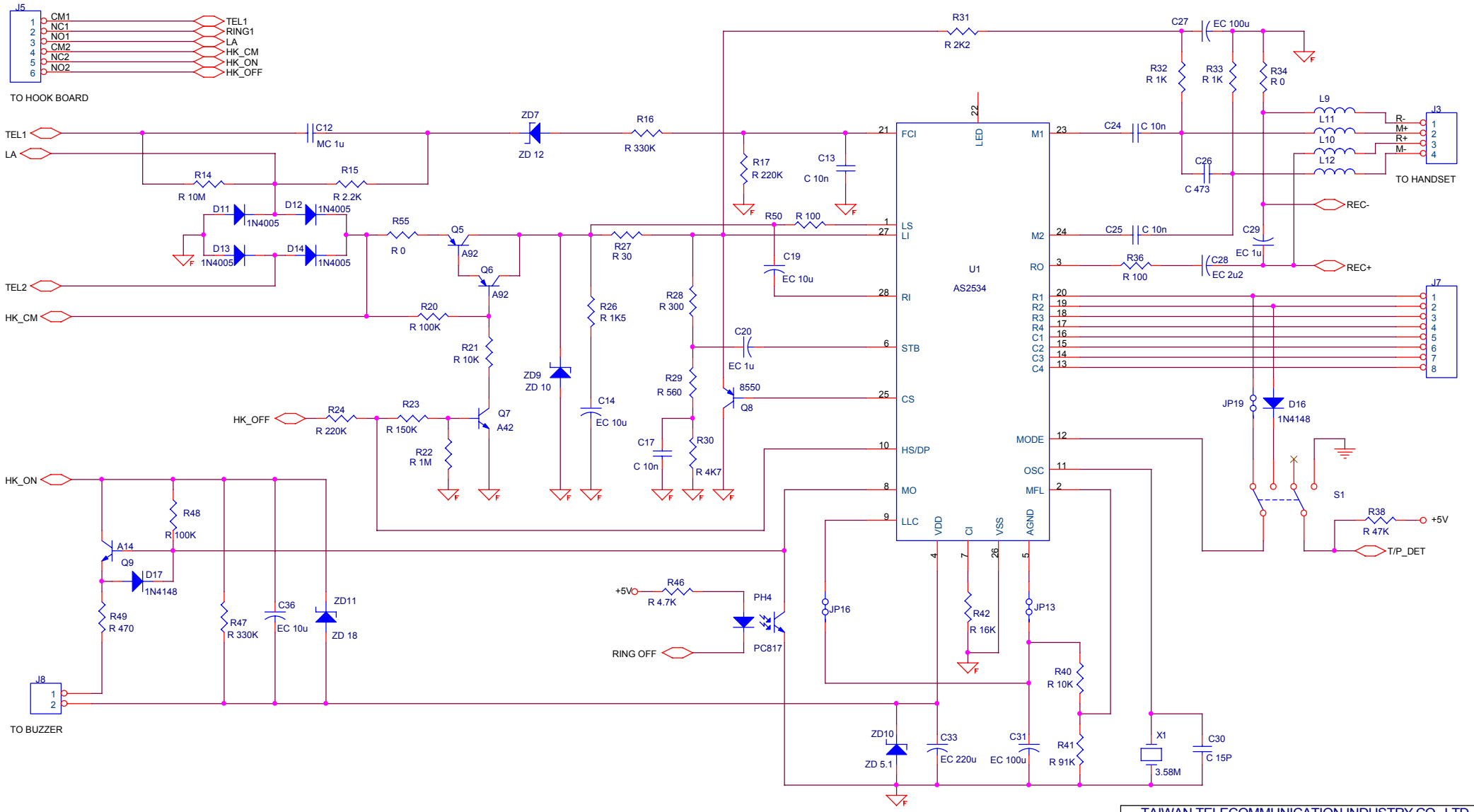
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

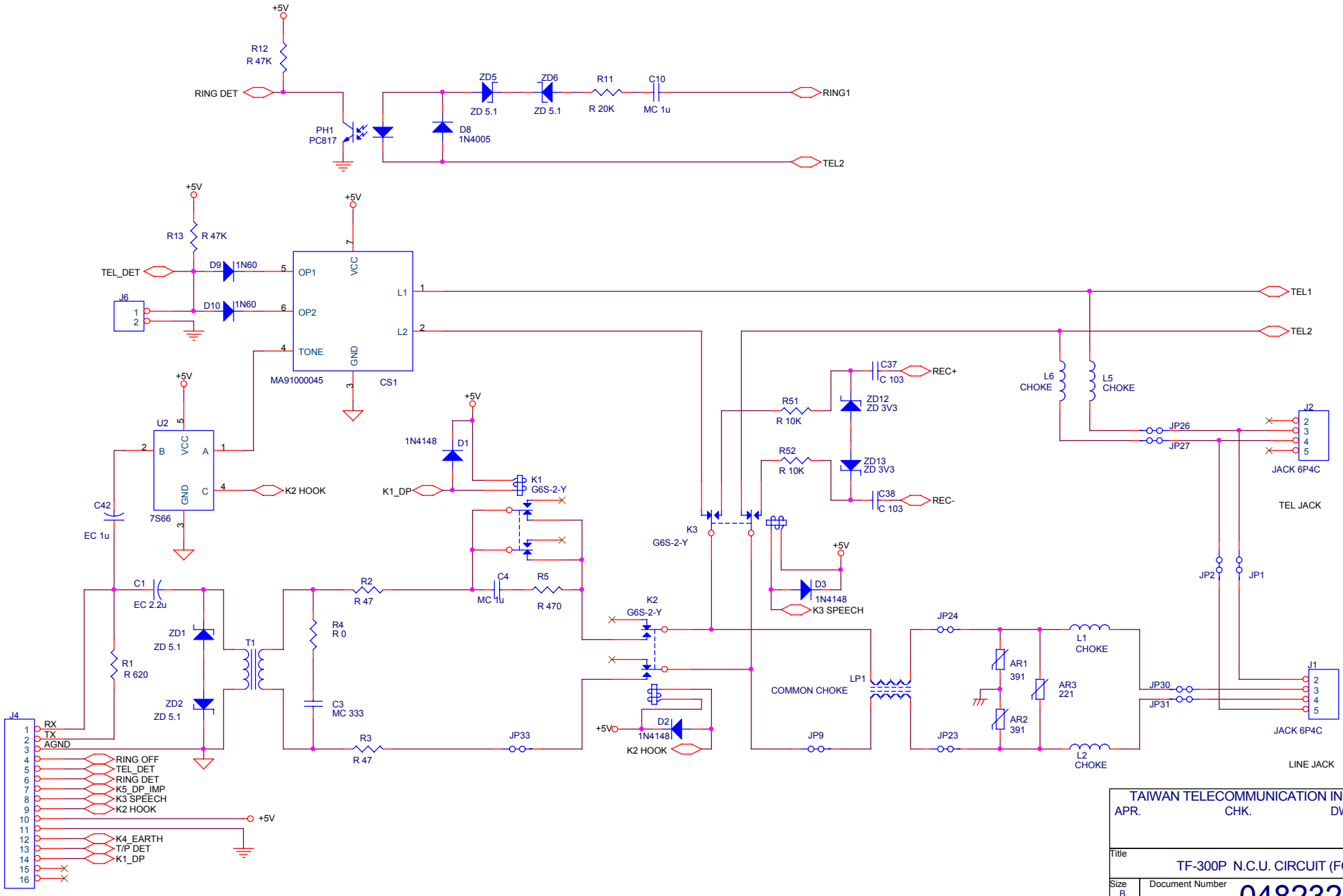
APR. CHK. DWG.

Title: TF-300P N.C.U. CIRCUIT (Taiwan)

Size: B | Document Number: 0482325210 | Rev: 1

Date: Tuesday, September 14, 1999 | Sheet 1 of 2


J5
CM1
NC1
NO1
CM2
NC2
NO2
TEL1
RING1
LA
HK_CM
HK_ON
HK_OFF
TO HOOK BOARD
TEL1
LA
TEL2
HK_CM
HK_OFF
HK_ON
C12
MC 1u
R14
R 10M
R15
R 2.2K
D11
D12
D13
D14
1N4005
R55
R 0
Q5
A92
Q6
A92
R20
R 100K
R21
R 10K
R24
R 220K
R23
R 150K
Q7
A42
R22
R 1M
ZD7
ZD 12
R16
R 330K
ZD9
ZD 10
R26
R 1K5
C14
EC 10u
R27
R 30
R28
R 300
C20
EC 1u
R29
R 560
Q8
8550
C17
C 10n
R30
R 4K7
R31
R 2K2
R17
R 220K
C13
C 10n
R50
R 100
C19
EC 10u
U1
AS2534
FCI
LS
LI
RI
STB
CS
HS/DP
MO
LLC
LED
M1
M2
RO
R1
R2
R3
R4
C1
C2
C3
C4
MODE
OSC
MFL
VDD
CI
VSS
AGND
C27
EC 100u
R32
R 1K
R33
R 1K
R34
R 0
C24
C 10n
C26
C 473
C25
C 10n
C29
EC 1u
R36
R 100
C28
EC 2u2
L9
L11
L10
L12
J3
R-
M+
R+
M-
TO HANDSET
REC-
REC+
J7
JP19
D16
1N4148
S1
R38
R 47K
+5V
T/P_DET
R48
R 100K
A14
Q9
D17
1N4148
R49
R 470
R47
R 330K
C36
EC 10u
ZD11
ZD 18
J8
TO BUZZER
+5V
R46
R 4.7K
RING OFF
PH4
PC817
JP16
R42
R 16K
JP13
R40
R 10K
R41
R 91K
ZD10
ZD 5.1
C33
EC 220u
C31
EC 100u
X1
3.58M
C30
C 15P
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.
APR.
CHK.
DWG.
Title
TF-300P N.C.U. CIRCUIT (Taiwan)
Size
B
Document Number
0482325210
Rev
1
Date: Tuesday, September 14, 1999
Sheet 2 of 2



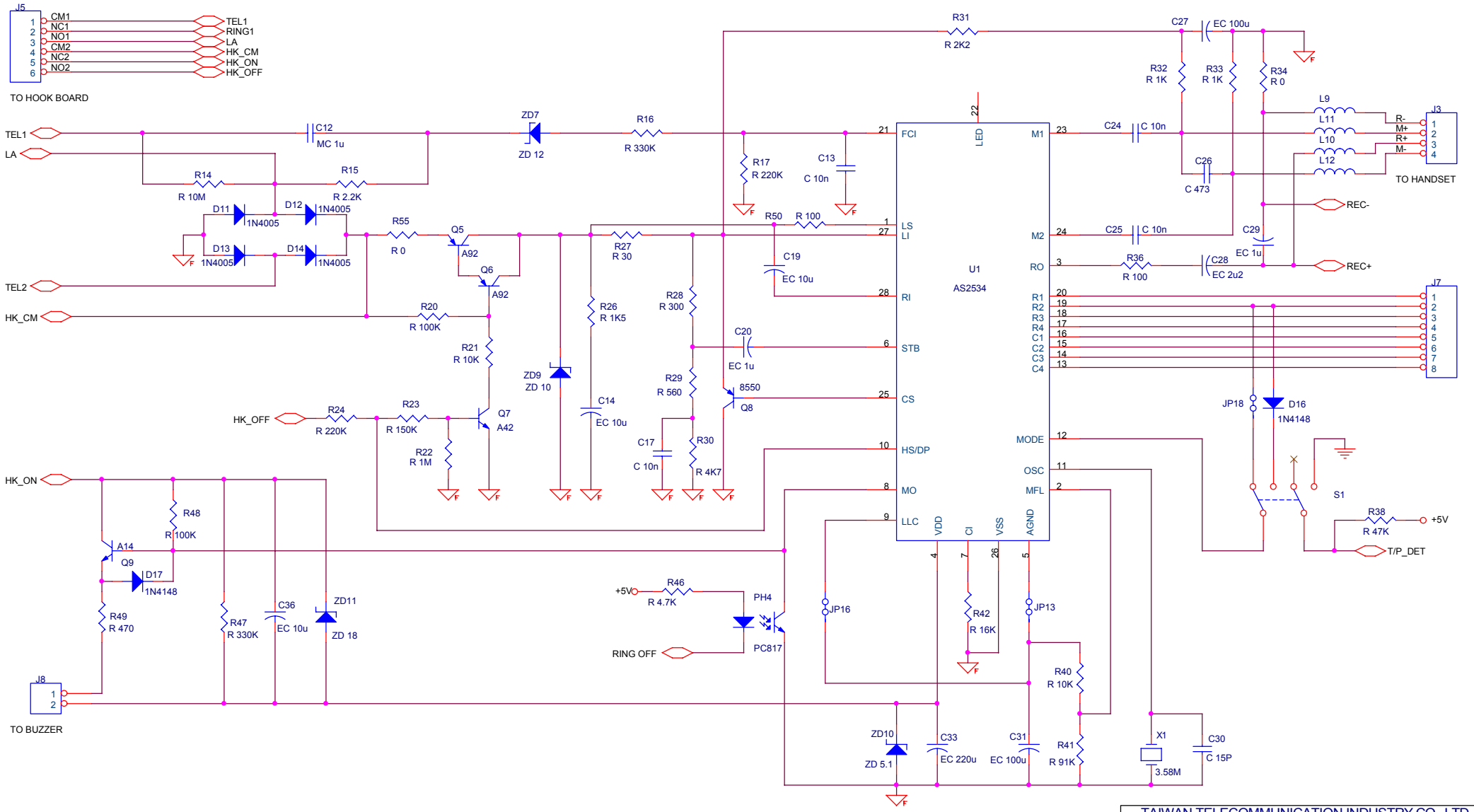
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P N.C.U. CIRCUIT (FCC)

Size: B | Document Number: 0482325211 | Rev: 1

Date: Tuesday, September 14, 1999 | Sheet 1 of 2



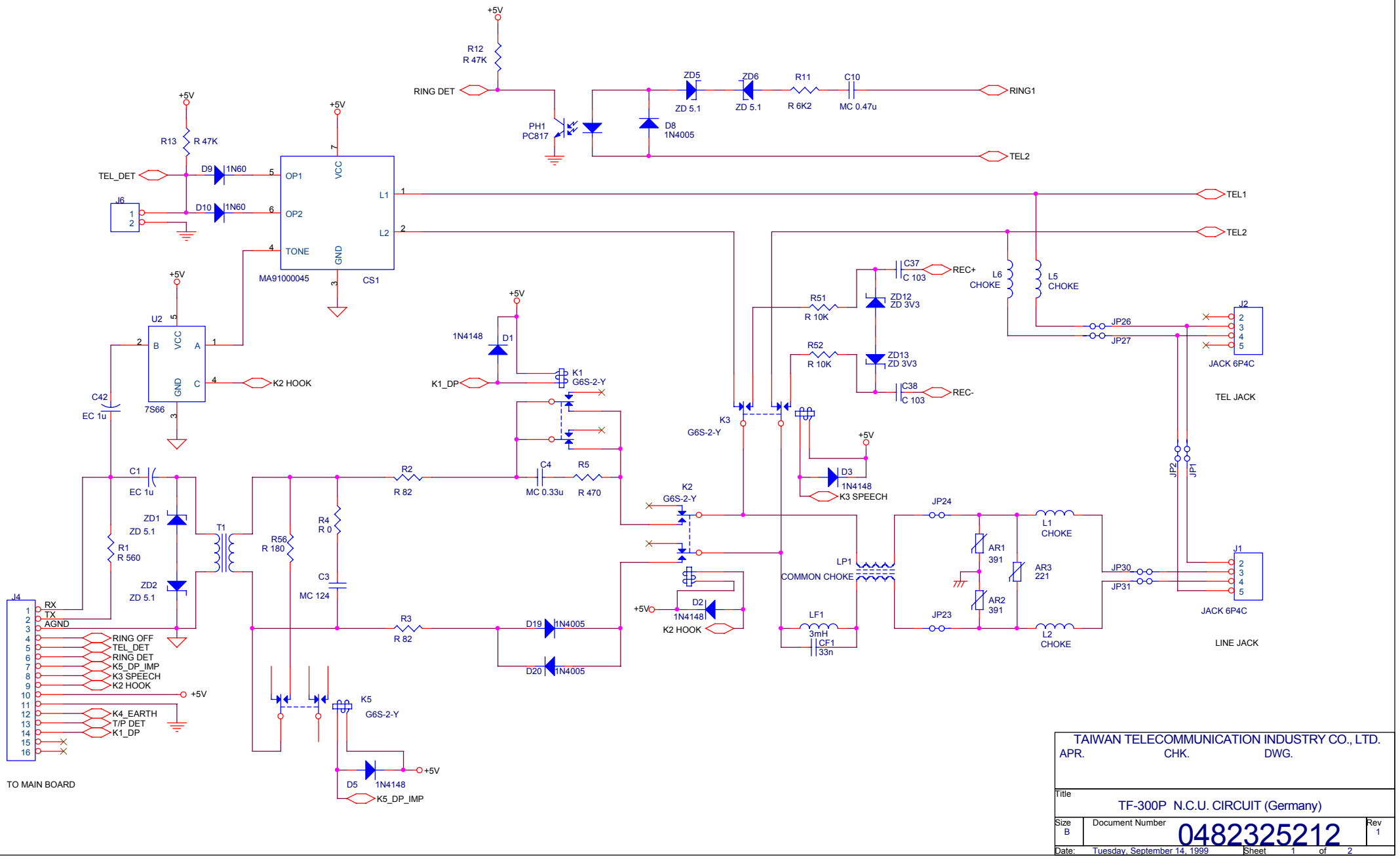
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P N.C.U. CIRCUIT (FCC)

Size: B | Document Number: 0482325211 | Rev: 1

Date: Tuesday, September 14, 1999 | Sheet 2 of 2



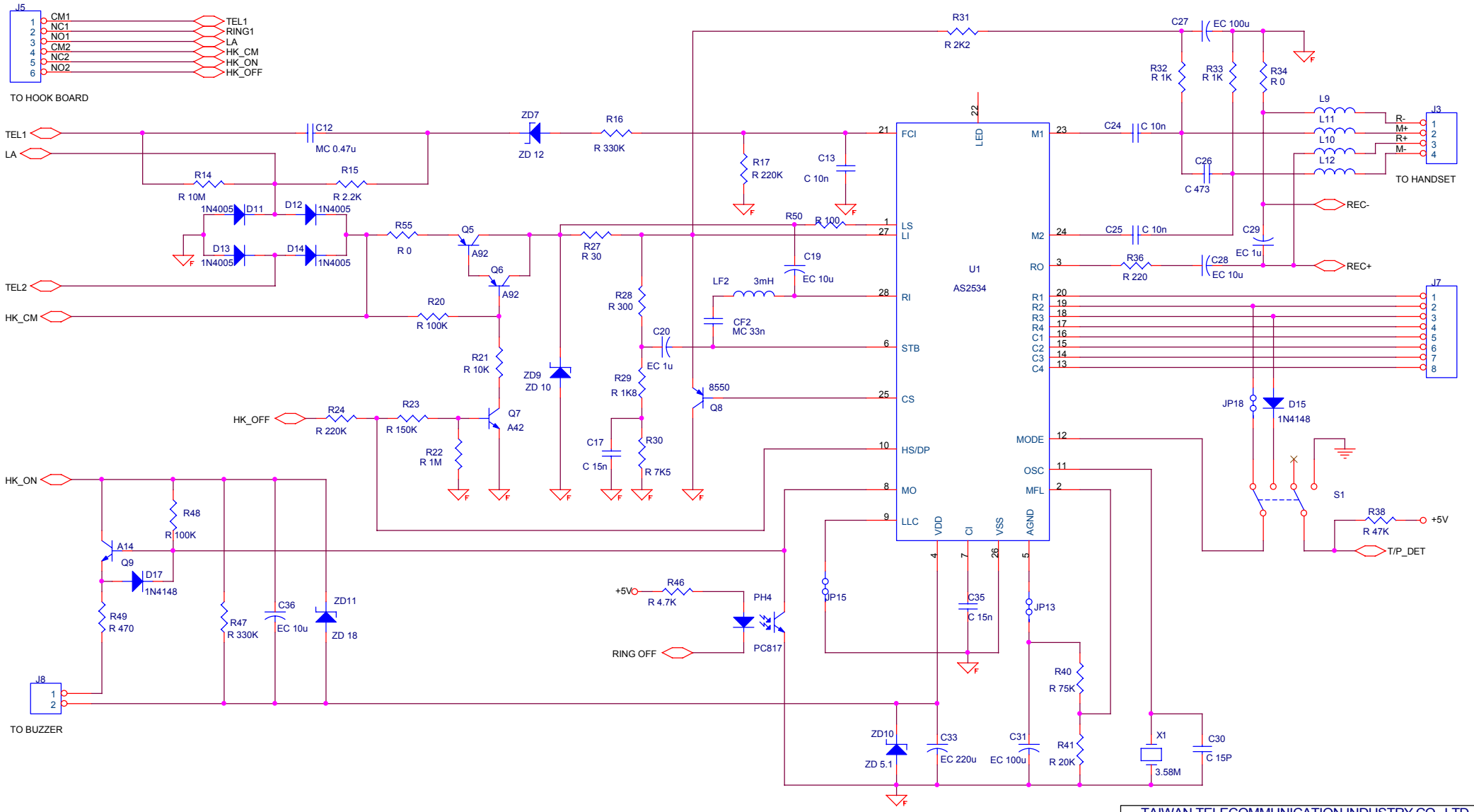
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

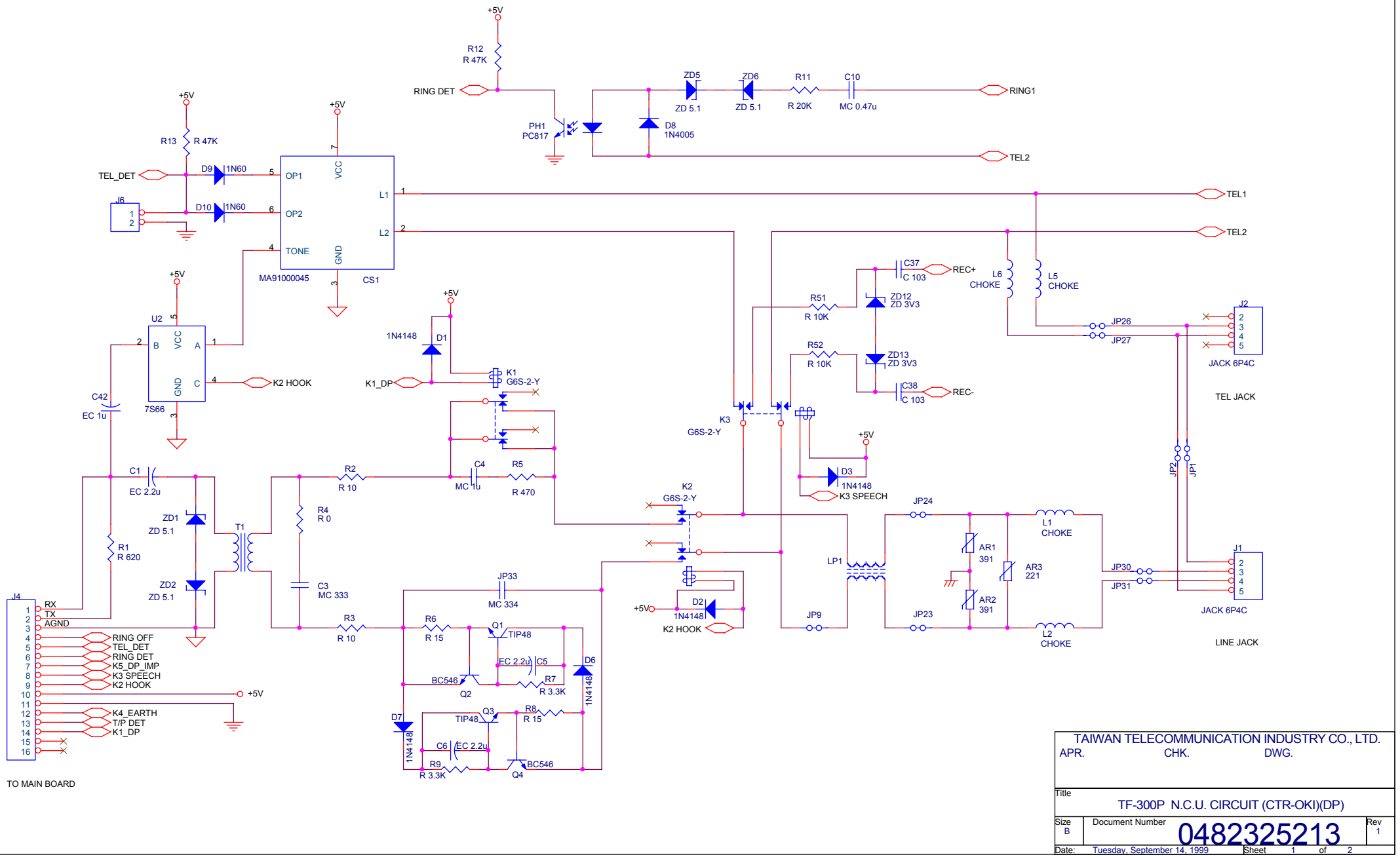
APR. CHK. DWG.

Title: TF-300P N.C.U. CIRCUIT (Germany)

Size: B | Document Number: 0482325212 | Rev: 1

Date: Tuesday, September 14, 1999 | Sheet 1 of 2


J5
CM1
NC1
NO1
CM2
NC2
NO2
TEL1
RING1
LA
HK_CM
HK_ON
HK_OFF
TO HOOK BOARD
TEL1
LA
TEL2
HK_CM
HK_OFF
HK_ON
C12
MC 0.47u
R14
R 10M
R15
R 2.2K
D11
D12
D13
D14
1N4005
R55
R 0
Q5
A92
Q6
A92
R20
R 100K
R21
R 10K
R24
R 220K
R23
R 150K
Q7
A42
R22
R 1M
ZD7
ZD 12
R16
R 330K
R27
R 30
ZD9
ZD 10
R28
R 300
C20
EC 1u
R29
R 1K8
C17
C 15n
R30
R 7K5
R50
R 100
C19
EC 10u
LF2
3mH
CF2
MC 33n
8550
Q8
R17
R 220K
C13
C 10n
R31
R 2K2
C27
EC 100u
R32
R 1K
R33
R 1K
R34
R 0
C24
C 10n
C26
C 473
C25
C 10n
C29
EC 1u
R36
R 220
C28
EC 10u
U1
AS2534
FCI
LI
RI
STB
CS
HS/DP
MO
LLC
LED
M1
M2
RO
R1
R2
R3
R4
C1
C2
C3
C4
MODE
OSC
MFL
VDD
CI
VSS
AGND
L9
L11
L10
L12
J3
R-
M+
R+
M-
TO HANDSET
REC-
REC+
J7
JP18
D15
1N4148
S1
R38
R 47K
+5V
T/P_DET
R48
R 100K
A14
Q9
D17
1N4148
R49
R 470
R47
R 330K
C36
EC 10u
ZD11
ZD 18
J8
TO BUZZER
+5V
R46
R 4.7K
PH4
PC817
RING OFF
JP15
C35
C 15n
JP13
R40
R 75K
R41
R 20K
ZD10
ZD 5.1
C33
EC 220u
C31
EC 100u
X1
3.58M
C30
C 15P
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.
APR.
CHK.
DWG.
Title
TF-300P N.C.U. CIRCUIT (Germany)
Size
B
Document Number
0482325212
Rev
1
Date: Tuesday, September 14, 1999
Sheet 2 of 2



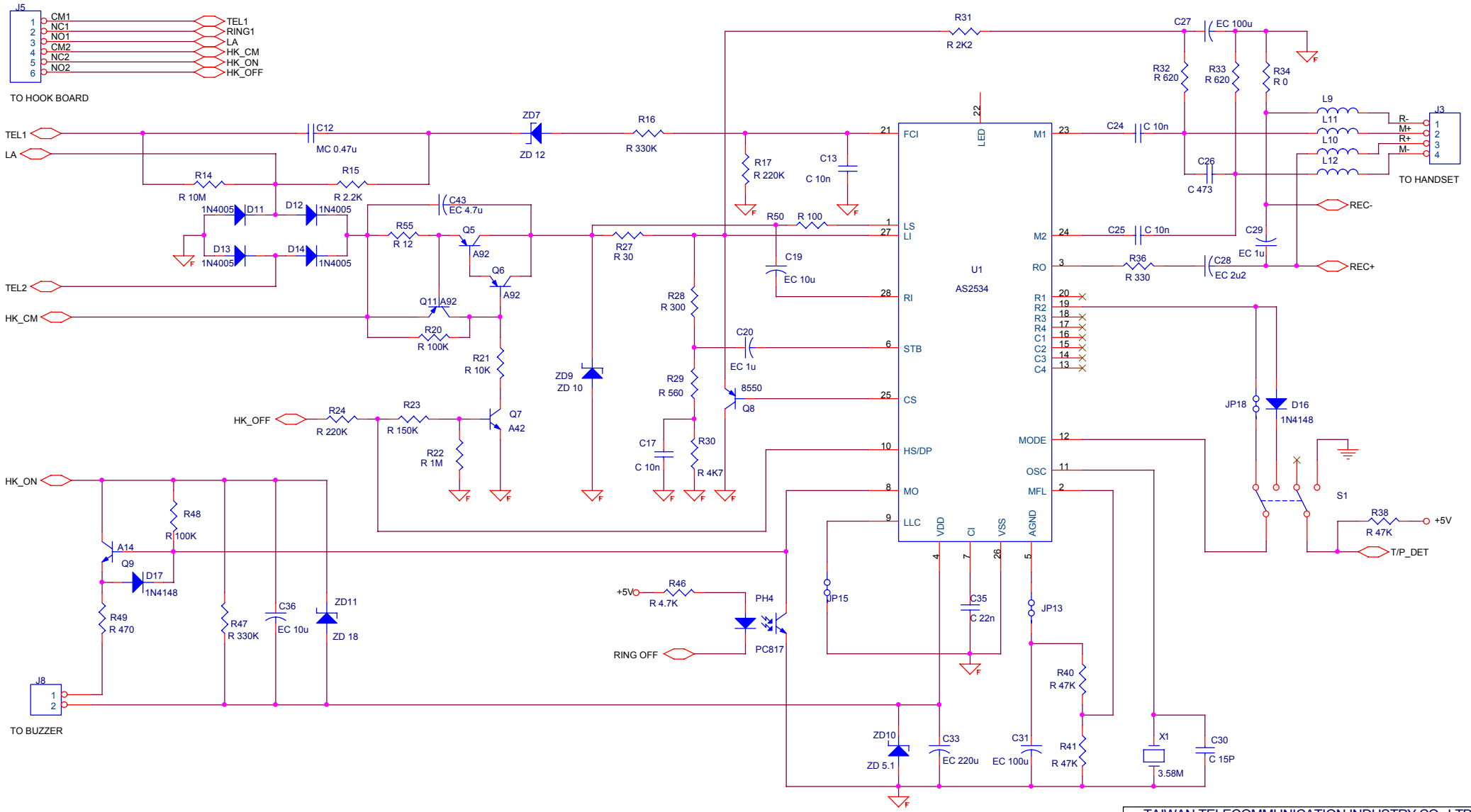
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P N.C.U. CIRCUIT (CTR-OKI)(DP)

Size: B | Document Number: 0482325213 | Rev: 1

Date: Tuesday, September 14, 1999 | Sheet 1 of 2



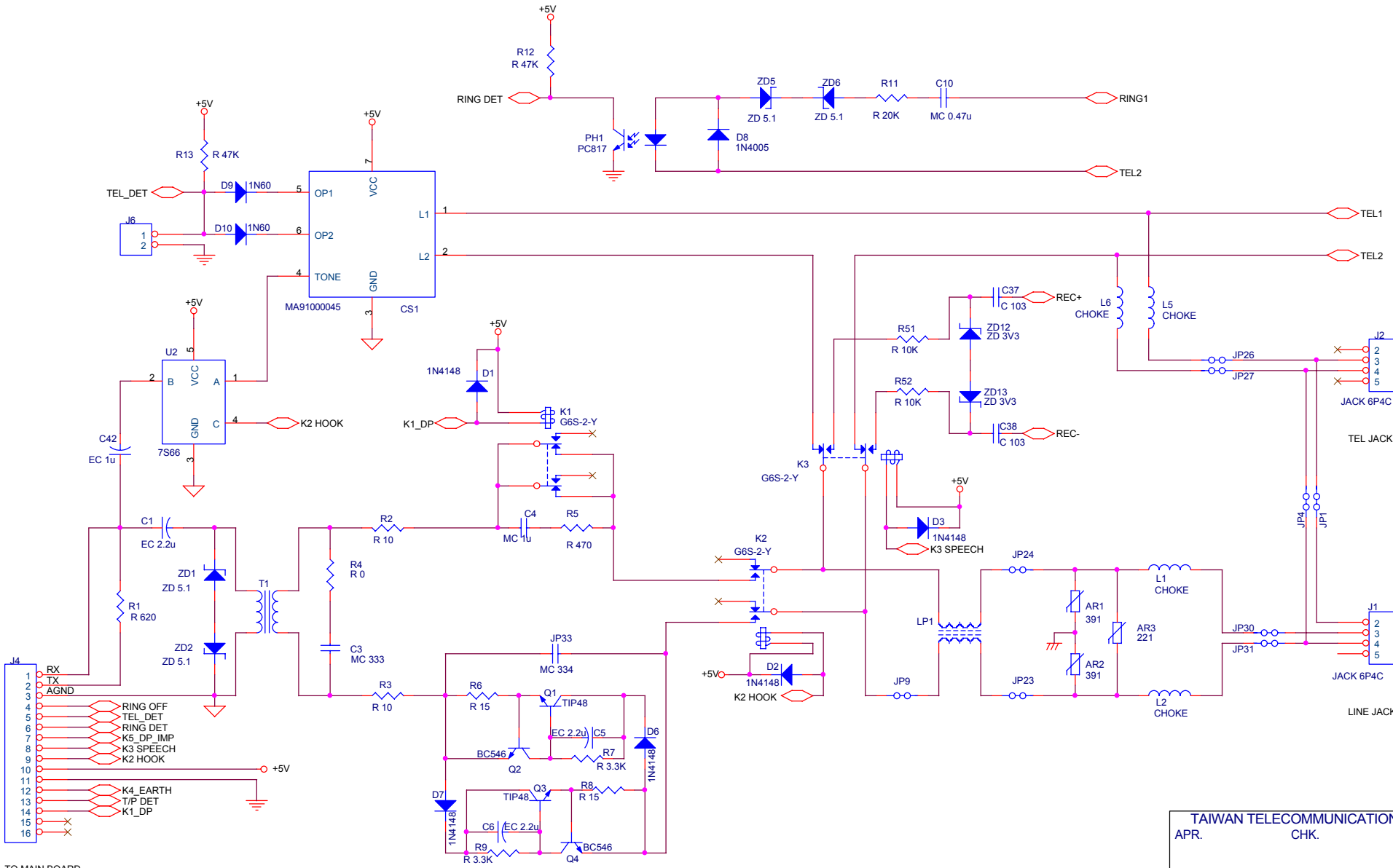
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P TELEPHONE CIRCUIT (CTR-OKI)(DP)

Size: B | Document Number: 0482325213 | Rev: 1

Date: Tuesday, September 14, 1999 | Sheet 2 of 2



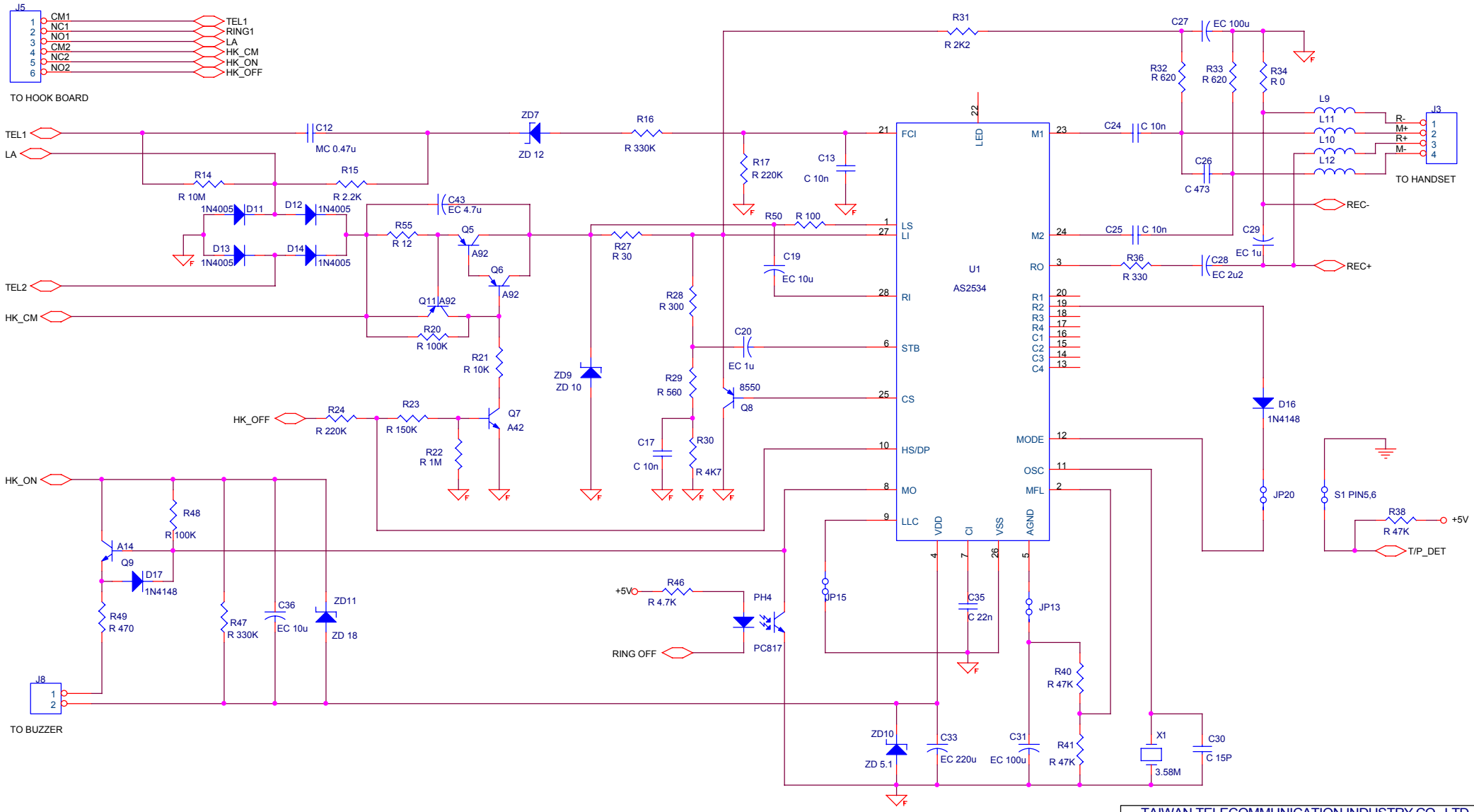
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P N.C.U. CIRCUIT (CTR-ITALY)

Size: B | Document Number: 0482325214 | Rev: 2

Date: Tuesday, September 14, 1999 | Sheet 1 of 2



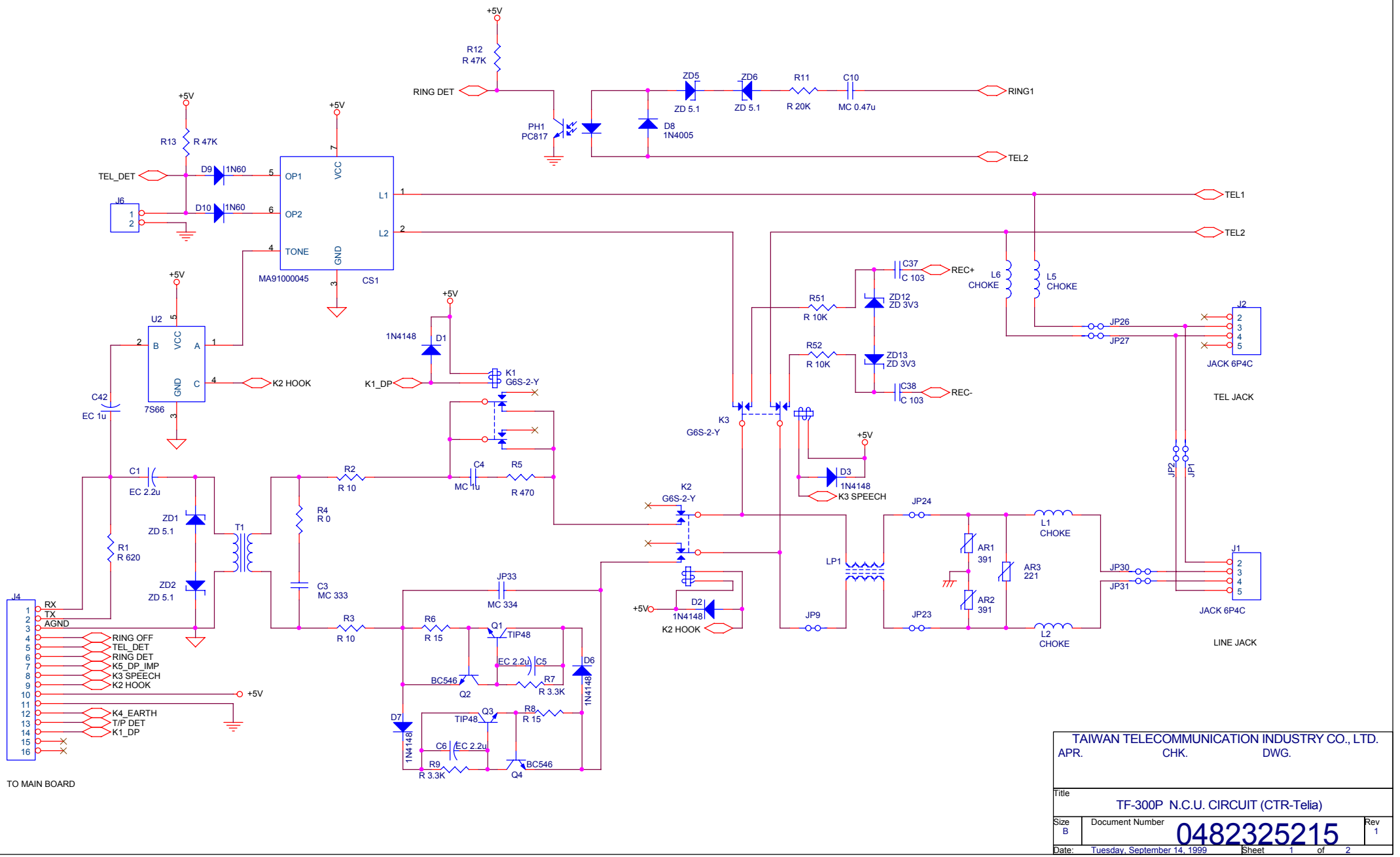
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P TELEPHONE CIRCUIT (CTR-ITALY)

Size: B | Document Number: 0482325214 | Rev: 2

Date: Tuesday, September 14, 1999 | Sheet 2 of 2



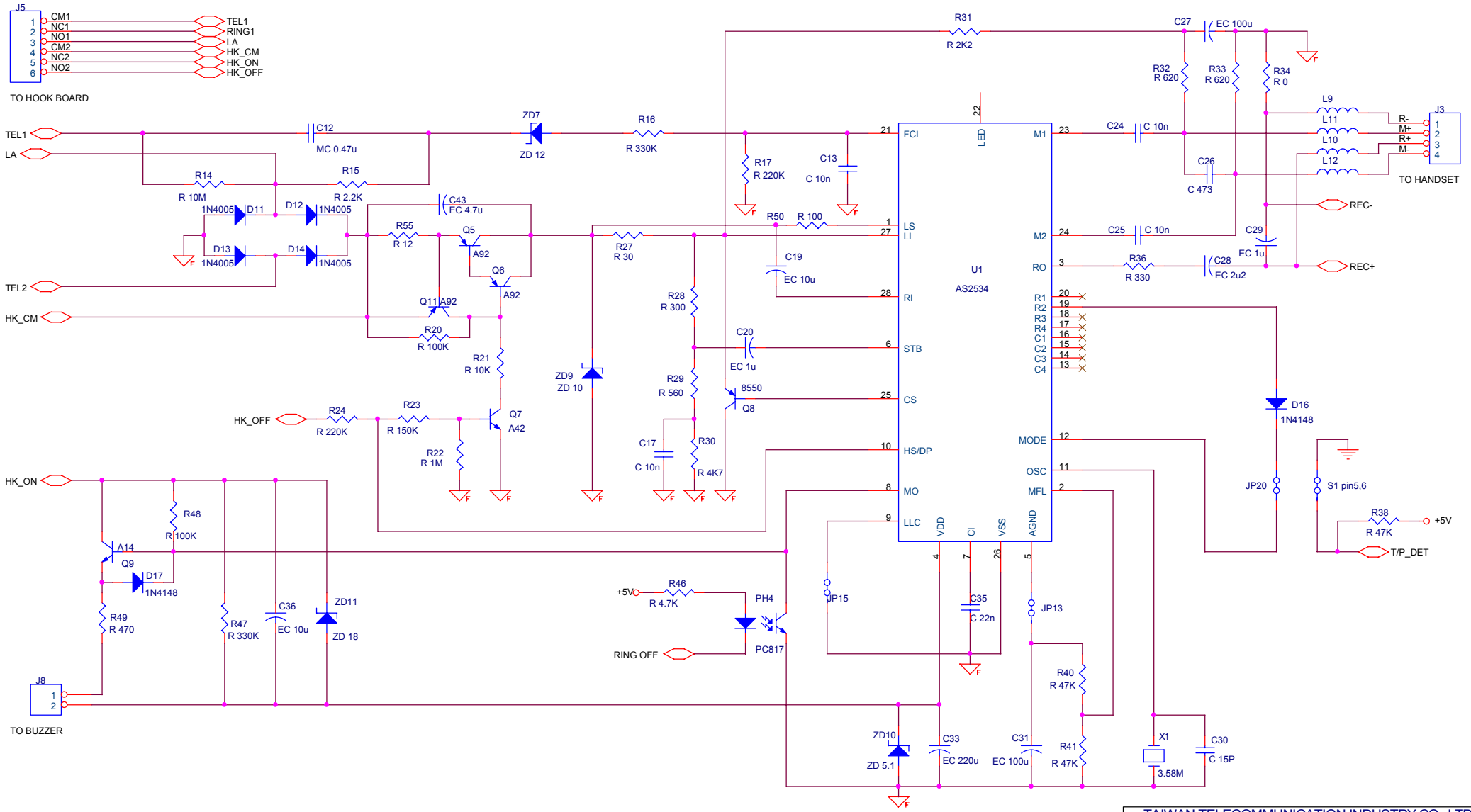
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P N.C.U. CIRCUIT (CTR-Telia)

Size: B | Document Number: 0482325215 | Rev: 1

Date: Tuesday, September 14, 1999 | Sheet 1 of 2



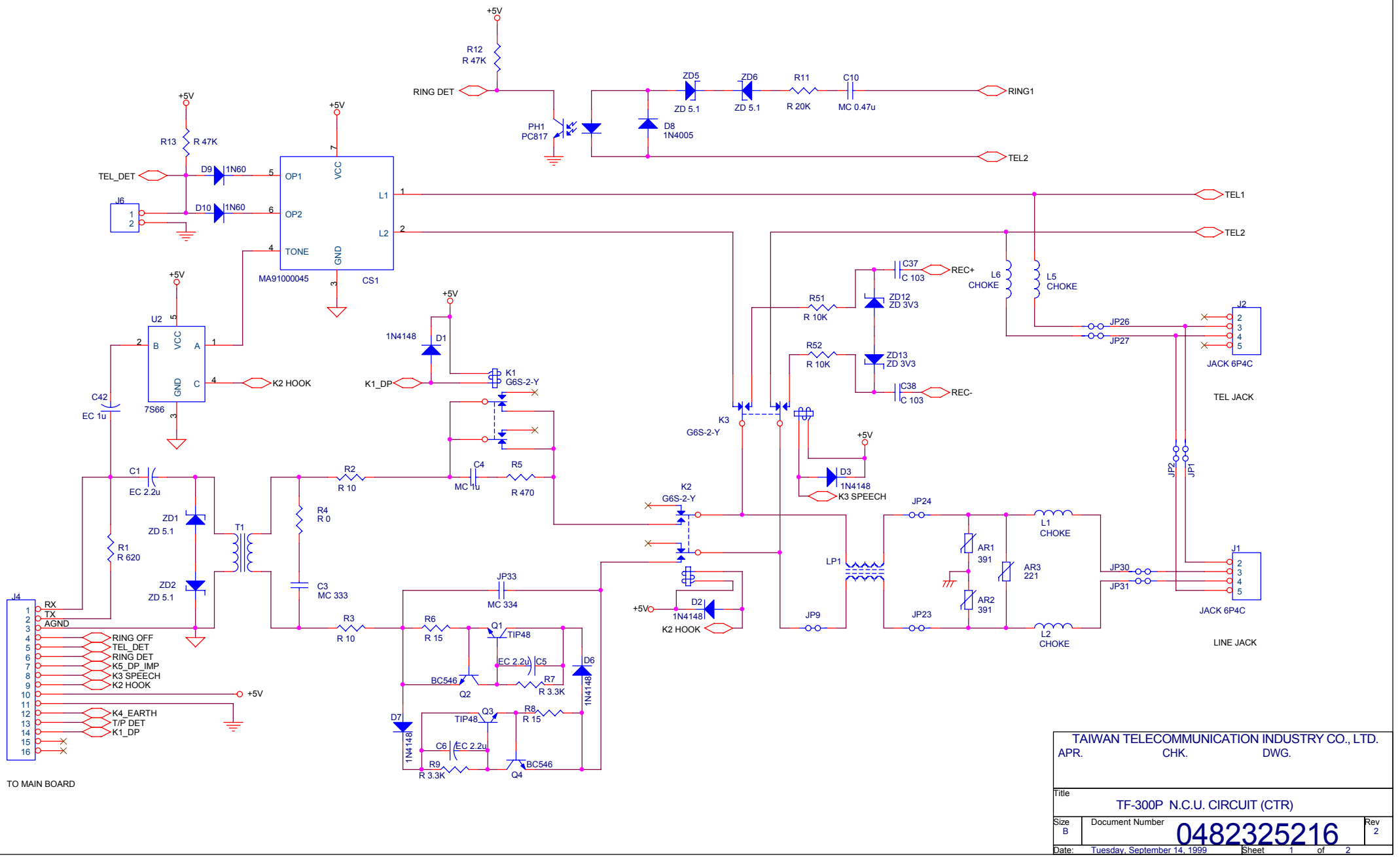
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P TELEPHONE CIRCUIT (CTR-Telia)

Size: B | Document Number: 0482325215 | Rev: 1

Date: Tuesday, September 14, 1999 | Sheet 2 of 2



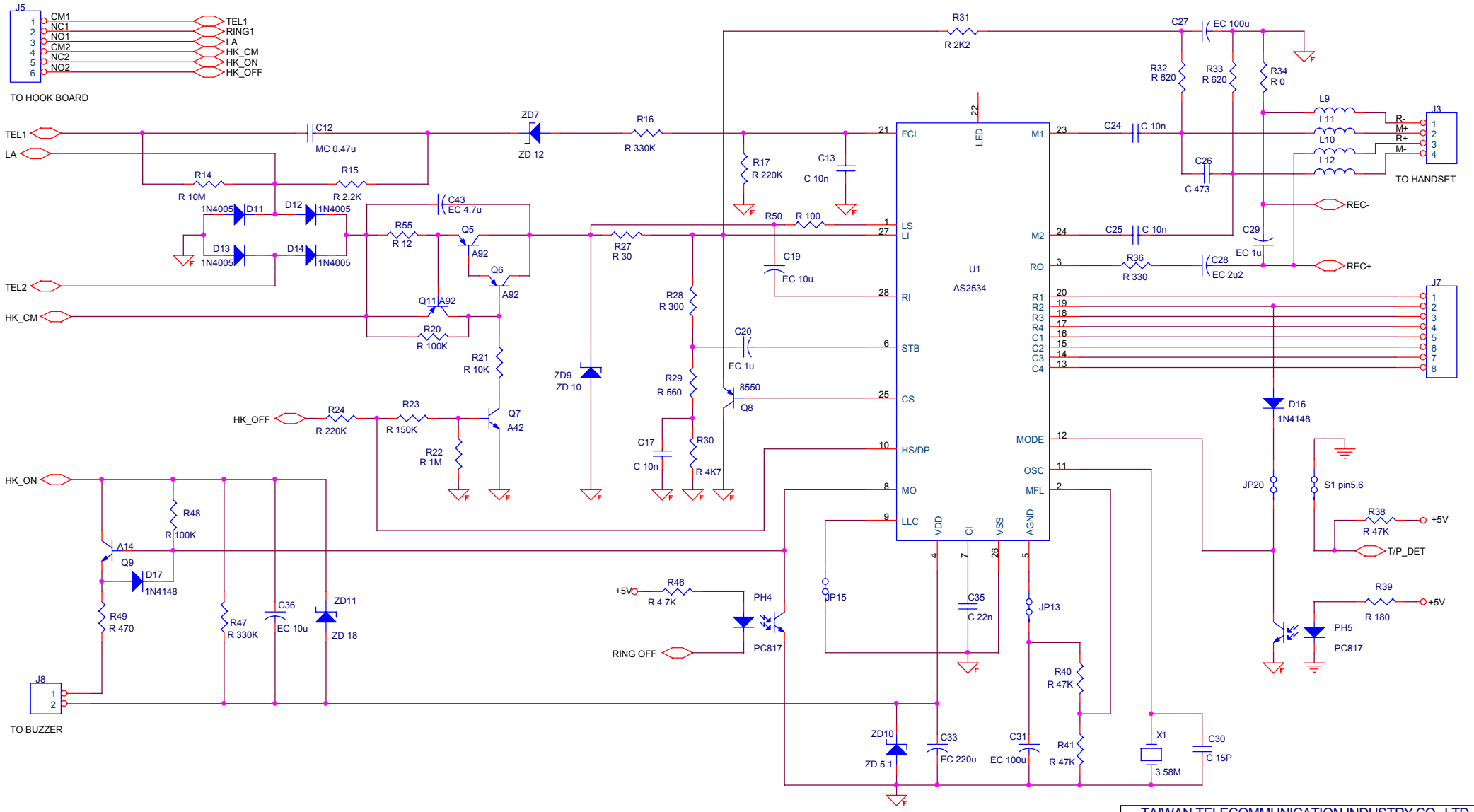
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P N.C.U. CIRCUIT (CTR)

Size: B | Document Number: 0482325216 | Rev: 2

Date: Tuesday, September 14, 1999 | Sheet 1 of 2



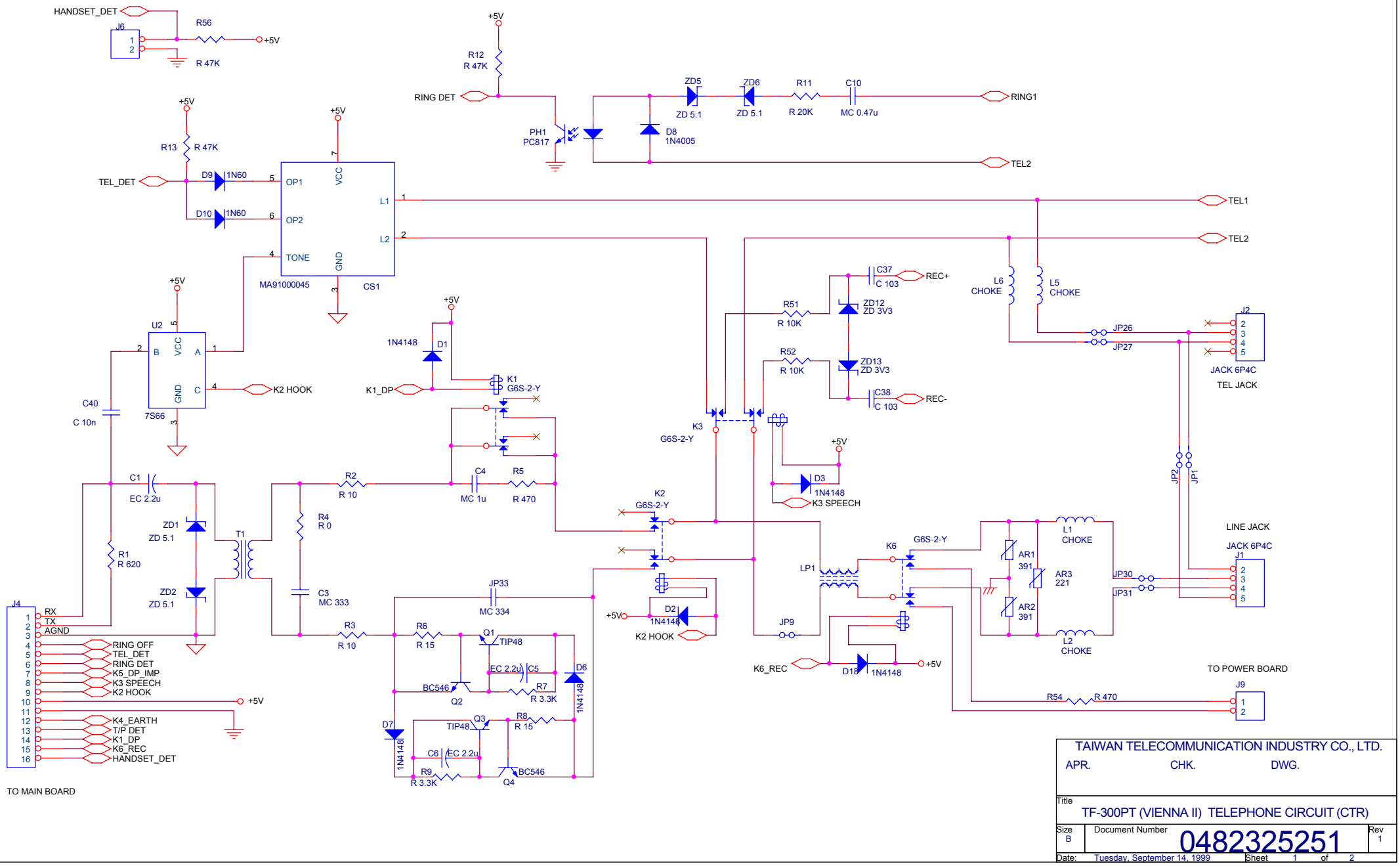
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300P TELEPHONE CIRCUIT (CTR)

Size: B | Document Number: 0482325216 | Rev: 2

Date: Tuesday, September 14, 1999 | Sheet 2 of 2



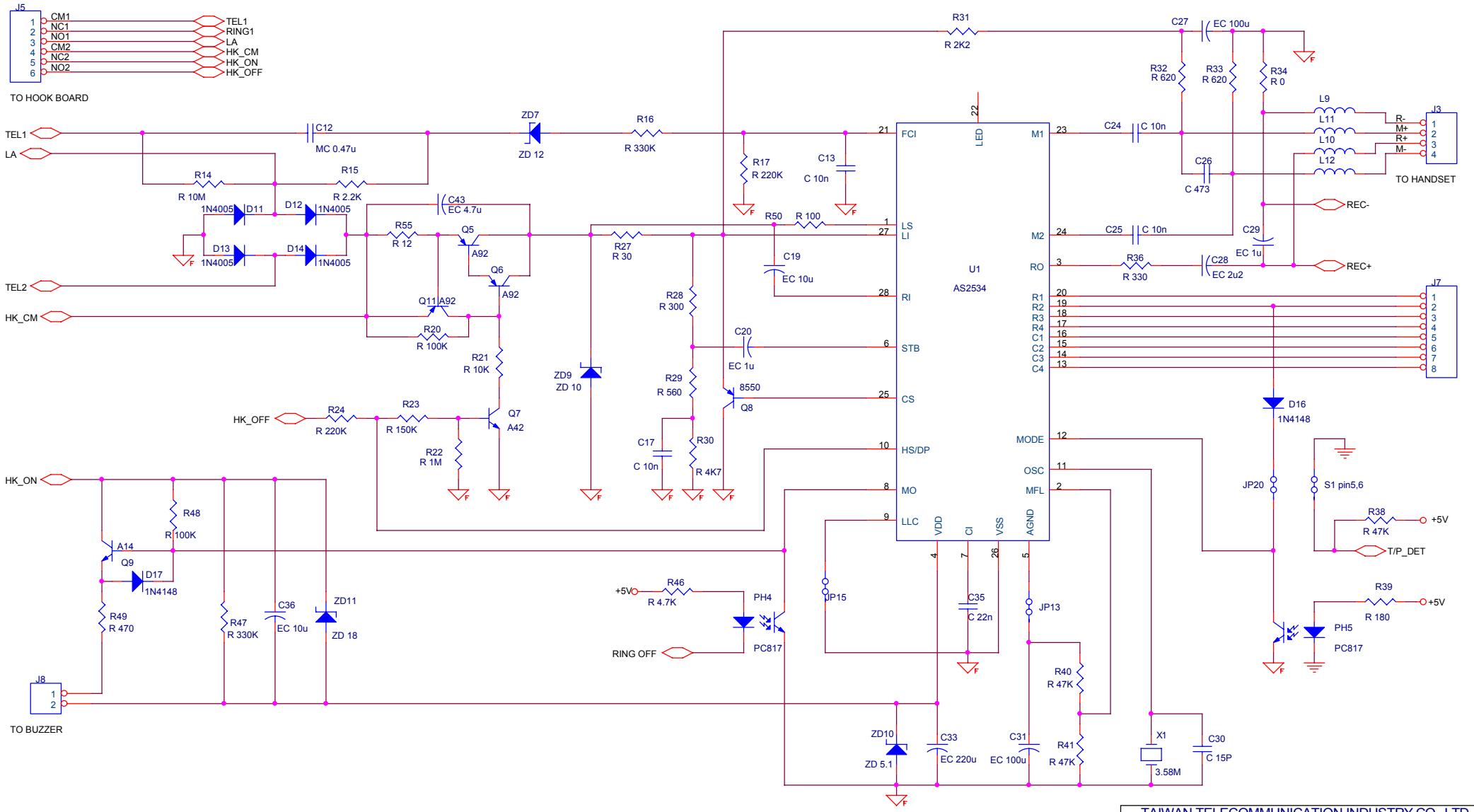
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.

APR. CHK. DWG.

Title: TF-300PT (VIENNA II) TELEPHONE CIRCUIT (CTR)

Size: B | Document Number: 0482325251 | Rev: 1

Date: Tuesday, September 14, 1999 | Sheet 1 of 2


J5
CM1
NC1
NO1
CM2
NC2
NO2
TEL1
RING1
LA
HK_CM
HK_ON
HK_OFF
TO HOOK BOARD
TEL1
LA
TEL2
HK_CM
HK_OFF
HK_ON
C12
MC 0.47u
ZD7
ZD 12
R16
R 330K
R31
R 2K2
C27
EC 100u
R32
R 620
R33
R 620
R34
R 0
L9
L11
L10
L12
J3
R-
M+
R+
M-
TO HANDSET
REC-
REC+
R14
R 10M
R15
R 2.2K
1N4005
D11
D12
D13
D14
C43
EC 4.7u
R55
R 12
Q5
A92
Q6
Q11
R20
R 100K
R21
R 10K
R24
R 220K
R23
R 150K
Q7
A42
R22
R 1M
R17
R 220K
C13
C 10n
R50
R 100
C19
EC 10u
R27
R 30
R28
R 300
C20
EC 1u
R29
R 560
8550
Q8
C17
C 10n
R30
R 4K7
ZD9
ZD 10
U1
AS2534
FCI
LS
LI
RI
STB
CS
HS/DP
MO
LLC
LED
M1
M2
RO
R1
R2
R3
R4
C1
C2
C3
C4
MODE
OSC
MFL
VDD
CI
VSS
AGND
C24
C 10n
C26
C 473
C25
C 10n
C29
EC 1u
R36
R 330
C28
EC 2u2
J7
D16
1N4148
JP20
S1 pin5,6
R38
R 47K
+5V
T/P_DET
R39
R 180
PH5
PC817
R48
R 100K
A14
Q9
D17
1N4148
R49
R 470
R47
R 330K
C36
EC 10u
ZD11
ZD 18
J8
TO BUZZER
+5V
R46
R 4.7K
PH4
PC817
RING OFF
JP15
C35
C 22n
JP13
R40
R 47K
R41
R 47K
ZD10
ZD 5.1
C33
EC 220u
C31
EC 100u
X1
3.58M
C30
C 15P
TAIWAN TELECOMMUNICATION INDUSTRY CO., LTD.
APR.
CHK.
DWG.
Title
TF-300PT (VIENNA II) TELEPHONE CIRCUIT (CTR)
Size
B
Document Number
0482325251
Rev
1
Date:
Tuesday, September 14, 1999
Sheet
2
of
2